

**INDIVIDUAL PROPERTY/DISTRICT  
MARYLAND HISTORICAL TRUST  
INTERNAL NR-ELIGIBILITY REVIEW FORM**

Property/District Name: Washington Aqueduct NHL/NRHD Survey Number: MO- M: 29-49

Project: Section 110 investigations Agency: F/COE

Site visit by MHT Staff: no ☒ X yes Name L. Bowlin Date 2/95

Eligibility recommended ☒ X Eligibility **not** recommended       

Criteria: ☒ X A        B ☒ X C        D Considerations:        A        B        C        D        E        F        G        None

Justification for decision: (Use continuation sheet if necessary and attach map)

The Washington Aqueduct was designated a National Historic Landmark in 1973. However, the documentation did not clearly define all the contributing resources of the Landmark district within the delineated boundaries which straddle Maryland and DC. Architectural investigations in 1995 have corrected this oversight. The Washington Aqueduct is a water supply system located within Montgomery County, MD and the District of Columbia. Water is supplied to DC and several municipalities in Northern Virginia. The NHL district is composed of all the resources which are associated with the first phase of development and its designer, Montgomery C. Meigs. The period of significance is 1853 to 1880. The Aqueduct is nationally significant as an intact 19th century water supply system. Some of the character-defining resources located in Maryland are the brick conduit itself, the Cabin John Bridge and the Dalecarlia Reservoir. In addition, the Aqueduct is important for its association with Meigs, a prolific architect and engineer. As the assistant to the Chief of Engineers, Meigs designed the gravity-fed water system before he was promoted to Quartermaster General of the Army Corps of Engineers. The NHL has 40 contributing resources identified in the architectural survey report on p.241-44.

A larger NR historic district exists as well. The NR eligible Historic district encompasses all the NHL resources but expands the period of significance to 1939. The NR district is eligible under Criterion A and C. The late nineteenth and twentieth century improvements illustrate the technological developments in the methods of procuring, purifying and delivering water. The McMillan Filtration Plant (DC), Dalecarlia Treatment Plant and the construction of a parallel conduit are some of the significant developments which supplemented Meigs' original design as the District's demand for potable water increased. Under Criterion C, the Aqueduct represents the works of two important engineers: Meigs and Allen Hazen who pioneered the slow sand filtration method of water purification. The NR district consists of 158 contributing resources listed on pages 227-234 of the architectural survey report.

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Documentation on the property/district is presented in: Washington Aqueduct Architectural Survey, draft report located in MHT library. S.106 correspondence in compliance file

Prepared by: Eliza Edwards et al. Goodwin & Associates

Lauren Bowlin  
Reviewer, Office of Preservation Services

November 2, 1995  
Date

NR program concurrence: ☒ ✓ yes        no        not applicable

Quinn B. Hewitt  
Reviewer, NR program

11-2-95  
Date

*gms*

## MARYLAND COMPREHENSIVE HISTORIC PRESERVATION PLAN DATA - HISTORIC CONTEXT

## I. Geographic Region:

☐ Eastern Shore (all Eastern Shore counties, and Cecil)  
☐ Western Shore (Anne Arundel, Calvert, Charles,  
Prince George's and St. Mary's)  
☒ Piedmont (Baltimore City, Baltimore, Carroll,  
Frederick, Harford, Howard, Montgomery)  
☐ Western Maryland (Allegany, Garrett and Washington)

## II. Chronological/Developmental Periods:

☐ Paleo-Indian 10000-7500 B.C.  
☐ Early Archaic 7500-6000 B.C.  
☐ Middle Archaic 6000-4000 B.C.  
☐ Late Archaic 4000-2000 B.C.  
☐ Early Woodland 2000-500 B.C.  
☐ Middle Woodland 500 B.C. - A.D. 900  
☐ Late Woodland/Archaic A.D. 900-1600  
☐ Contact and Settlement A.D. 1570-1750  
☐ Rural Agrarian Intensification A.D. 1680-1815  
☒ Agricultural-Industrial Transition A.D. 1815-1870  
☒ Industrial/Urban Dominance A.D. 1870-1930  
☒ Modern Period A.D. 1930-Present  
☐ Unknown Period ( ☐ prehistoric ☐ historic)

## III. Prehistoric Period Themes:

☐ Subsistence  
☐ Settlement  
☐ Political  
☐ Demographic  
☐ Religion  
☐ Technology  
☐ Environmental Adaptation

## IV. Historic Period Themes:

☐ Agriculture  
☒ Architecture, Landscape Architecture,  
and Community Planning  
☐ Economic (Commercial and Industrial)  
☒ Government/Law  
☐ Military  
☐ Religion  
☐ Social/Educational/Cultural  
☐ Transportation

## V. Resource Type:

Category: historic district of buildings, structuresHistoric Environment: rural and urbanHistoric Function(s) and Use(s): government/public works, water systemEdward D. Hardy engineer & designer of Dalecarlia Filtration PlantKnown Design Source: Montgomery C. Meigs resources dating between 1853-1880

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OMB No. 1024-0018

United States Department of the Interior, National Park Service

NATIONAL HISTORIC LANDMARK NOMINATION

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1. Name of Property

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historic name: Washington Aqueduct  
other names/site number: Not applicable

=====

2. Location

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street & number: N/A not for publication: N/A

city or town: Great Falls to D.C. vicinity: Washington, D.C.

states: MD and DC county: Montgomery Co., MD and District  
of Columbia

codes: 001 and 031 zip code: N/A

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3. State/Federal Agency Certification

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As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this \_\_\_\_\_ nomination \_\_\_\_\_ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property \_\_\_\_\_ meets \_\_\_\_\_ does not meet the National Register Criteria. I recommend that this property be considered significant \_\_\_\_\_ nationally \_\_\_\_\_ statewide \_\_\_\_\_ locally.  
( \_\_\_\_\_ See continuation sheet for additional comments.)

\_\_\_\_\_  
Signature of certifying official Date

\_\_\_\_\_  
State or Federal agency and bureau  
In my opinion, the property \_\_\_\_\_ meets \_\_\_\_\_ does not meet the National Register criteria.  
( \_\_\_\_\_ See continuation sheet for additional comments.)

\_\_\_\_\_  
Signature of commenting or other official Date

\_\_\_\_\_  
State or Federal agency and bureau

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4. National Park Service Certification

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I, hereby certify that this property is:

\_\_\_\_\_ entered in the National Register \_\_\_\_\_

\_\_\_\_\_ See continuation sheet.

\_\_\_\_\_ determined eligible for the National Register \_\_\_\_\_

\_\_\_\_\_ See continuation sheet.

\_\_\_\_\_ determined not eligible for the National Register

\_\_\_\_\_ removed from the National Register \_\_\_\_\_

\_\_\_\_\_ other (explain): \_\_\_\_\_

\_\_\_\_\_  
Signature of Keeper                      Date of Action

=====

5. Classification

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Ownership of Property (Check as many boxes as apply)

\_\_\_\_\_ private  
☒ public-local  
\_\_\_\_\_ public-State  
☒ public-Federal

Category of Property (Check only one box)

\_\_\_\_\_ building(s)  
☒ district  
\_\_\_\_\_ site  
\_\_\_\_\_ structure  
\_\_\_\_\_ object

Number of Resources within Property

Contributing		Noncontributing
<u>  3  </u>	<u> 13 </u>	buildings
<u>  0  </u>	<u>  0 </u>	sites
<u> 37 </u>	<u> 20 </u>	structures
<u>  0 </u>	<u>  0 </u>	objects
<b>40</b>	<b>33</b>	<b>Total</b>

Number of contributing resources previously listed in the  
National Register 10

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Name of related multiple property listing (Enter "N/A" if property is not part of a multiple property listing.) N/A

=====  
6. Function or Use  
=====

Historic: Government Sub: Public Works  
Industry Waterworks

Current: Government Public Works  
Industry Waterworks

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7. Description  
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Architectural Classification:  
Mid-Nineteenth Century Sub: Classical Revival  
Late Victorian Italianate  
Second Empire

Materials (Enter categories from instructions)  
foundation: Stone (Conduit)  
walls: Brick (Caretaker Dwelling), Stone (Culvert  
headwalls, Bridges, Gatehouses)  
other: \_\_\_\_\_

Narrative Description (Describe the historic and current condition of the property on one or more continuation sheets.)

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8. Statement of Significance  
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Applicable National Register Criteria (Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing)

- X A Property is associated with events that have made a significant contribution to the broad patterns of our history.
- \_\_\_ B Property is associated with the lives of persons significant in our past.

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- ☒ C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- ☐ D Property has yielded, or is likely to yield information important in prehistory or history.

Criteria Considerations (Mark "X" in all the boxes that apply.)

- ☐ A owned by a religious institution or used for religious purposes.
- ☐ B removed from its original location.
- ☐ C a birthplace or a grave.
- ☐ D a cemetery.
- ☐ E a reconstructed building, object, or structure.
- ☐ F a commemorative property.
- ☐ G less than 50 years of age or achieved significance within the past 50 years.

Applicable National Historic Landmark Criteria (Mark "x" in one or more boxes for the criteria qualifying the property as a National Historic Landmark)

- ☒ 1 Property is associated with events that have made a significant contribution to, and are identified with, or that outstandingly represent, the broad national patterns of United States history and from which an understanding and appreciation of those patterns may be gained.
- ☐ 2 Property is associated with the lives of persons nationally significant in the history of the United States.

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- 3 Property represents some great idea or ideal of the American people.
- X 4 Property embodies distinctive characteristics of an architectural specimen exceptionally valuable for a study of a period, style, or method of construction, or that represent a significant, distinctive and exceptional entity whose components may lack individual distinction.
- 5 Property is composed of integral parts of the environment not sufficiently significant by reason of historical association or artistic merit to warrant individual recognition but collectively compose an entity of exceptional historic or architectural significance, or outstandingly commemorate or illustrate a way of life or culture.
- 6 Property yields, or may be likely to yield, information of major scientific importance by revealing new cultures, or by shedding light upon periods of occupation over large areas of the United States. Such sites are those which have yielded, or which may reasonably be expected to yield, data affecting theories, concepts, and ideas to a major degree

National Register Areas of Significance (Enter categories from instructions)

Community Planning and Development  
Engineering  
Health/Medicine

National Historic Landmark Themes (1987 version)

V.K. Political and Military Affairs, 1783 - 1860:  
The Army and Navy  
XVIII.H. Technology: Construction  
XVIII.K. Technology: Water & Sewerage  
XVIII.L. Fire, Safety, Sanitation, and Pollution Controls

National Historic Landmark Themes (1994 version)

Theme: VII. Transforming the Environment

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Subtheme: 1. Manipulating the Environment and its  
Resources

Period of Significance: 1853 - 1880

Significant Dates: N/A

Significant Person (Complete if Criterion B is marked above):  
N/A

Cultural Affiliation: N/A

Architect/Builder: Captain Montgomery Cunningham Meigs

Narrative Statement of Significance (Explain the significance  
of the property on one or more continuation sheets.)

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9. Major Bibliographical References

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(Cite the books, articles, and other sources used in  
preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS)

- ☐ preliminary determination of individual listing  
(36 CFR 67) has been requested.
- ☒ previously listed in the National Register
- ☐ previously determined eligible by the National  
Register
- ☒ previously designated a National Historic Landmark  
recorded by Historic American Buildings Survey #
- ☒ recorded by Historic American Engineering Record #  
MD-47

Primary Location of Additional Data

- |  |   |
|--|---|
| <input type="checkbox"/> State Historic      | <input type="checkbox"/> Local government   |
| <input type="checkbox"/> Preservation Office |   |
| <input type="checkbox"/> Other State agency  | <input type="checkbox"/> University   |
| <input type="checkbox"/> Federal agency      | <input checked="" type="checkbox"/> Other: Washington<br>Aqueduct, Dalecarlia Reservoir |

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10. Geographical Data

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Acreage of Property: approximately 374 acres

UTM References (Place additional UTM references on a continuation sheet)

Zone	Easting	Northing	Zone	Easting	Northing
1) 18	3057604	3197403	19) 18	316580	4312600
2) 18	305340	4319240	20) 18	318860	4312840
3) 18	305480	4319120	21) 18	316860	4312660
4) 18	305440	4318940	22) 18	317380	4311560
5) 18	305220	4319080	23) 18	317300	4311700
6) 18	305720	4317740	24) 18	317100	4311720
7) 18	306200	4317300	25) 18	317000	4311600
8) 18	308220	4316500	26) 18	317320	4311000
9) 18	309620	4316440	27) 18	317340	4310880
10) 18	311070	4316160	28) 18	318060	4309900
11) 18	311300	4316100	29) 18	318060	4309560
12) 18	311640	4315960	30) 18	318200	4309460
13) 18	312340	4315960	31) 18	318420	4309260
14) 18	312480	4316040	32) 18	318820	4308720
15) 18	313260	4315820	33) 18	318620	4308600
16) 18	314060	4315740	34) 18	318200	4309100
17) 18	314680	4315220	35) 18	321660	4307960
18) 18	316140	4312680			

Verbal Boundary Description:

The portion of the Washington Aqueduct being nominated for National Historic Landmark designation straddles the Maryland/Washington, D.C. boundary. This property runs from Great Falls, Maryland to the Georgetown Reservoir in Washington, D.C. The Aqueduct property included in the NHL boundaries is 60 feet in width throughout most of its length, but widens at three locations: Great Falls, Dalecarlia Reservoir, and the Georgetown Reservoir. These three areas contain the majority of the above-ground resources that were constructed as part of the original Aqueduct system. The portions of the Washington Aqueduct property excluded from the NHL boundaries along this stretch include the Little Falls pumping facility, and the Dalecarlia property south of MacArthur Boulevard. Rock Creek Bridge (Bridge 6), located southeast of the Georgetown Reservoir where Pennsylvania Avenue crosses

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Rock Creek, was included as a discontiguous element of the system. The following paragraphs discuss in greater detail the areas where the system widens beyond 60 feet.

#### Great Falls (Maryland)

Great Falls marks the beginning of the Aqueduct system. The westernmost part of the system is on the Virginia shore of the Potomac River, where the Great Falls Dam begins. The dam meets the Maryland shore at the intake facility. At this point, the boundaries widen to encompass eight built resources. The boundaries extend around these eight buildings and then head south to follow the path of the conduits. From Great Falls, the Aqueduct (occupying land approximately 60 feet wide) heads in a south-southeasterly direction through a wooded area for one and three-quarter miles until it reaches the intersection of MacArthur Boulevard. From this point, the Aqueduct runs in a southeasterly direction below MacArthur Boulevard for eight miles, until it reaches the Dalecarlia Reservoir. During this eight-mile stretch, the conduits cross Bridge 3 and Bridge 4 (Cabin John Bridge).

#### Dalecarlia Reservoir (D.C.)

At the Dalecarlia facility, the Aqueduct discharges into the forebay, located in the northwestern neck of the Dalecarlia Reservoir. At this point, the NHL boundaries widen to encompass the Washington Aqueduct property east of MacArthur Boulevard. It is at Dalecarlia that the NHL boundaries cross the Maryland/D.C. line, which extends through the reservoir. The Aqueduct property west of MacArthur Boulevard is excluded from the NHL boundaries. From the southeast corner of the Dalecarlia Reservoir, the Aqueduct resumes its course heading in a southeasterly direction below MacArthur Boulevard. From Dalecarlia, the Aqueduct extends two miles (occupying a 60-foot wide path) to the Georgetown Reservoir.

#### Georgetown Reservoir (D.C.)

The third area that the NHL boundaries widen is at the Georgetown Reservoir. The Aqueduct enters the reservoir

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in the northwestern corner of the basin. The boundaries encompass all 63 acres of Washington Aqueduct property comprising the Georgetown Reservoir.

**Boundary Justification:**

The boundaries of the NHL property were defined to encompass all extant elements of the original Washington Aqueduct system designed by Montgomery Meigs. The system has evolved and expanded over time, but most of the original elements are intact and operational. The boundaries include those resources that were built in association with the original system but that are no longer owned or operated by the Washington Aqueduct. Due to the original layout of the system, the property boundaries also include many of the subsequent additions to the Aqueduct system, such as the new conduit, and the new intake facility at Great Falls.

The northernmost boundary begins at the Great Falls Dam where water is first directed into the Aqueduct system. The boundaries continue along the path of the Aqueduct, encompassing the minimum area necessary to accommodate the width of the Aqueduct. The southernmost boundary ends at the Georgetown Reservoir. Bridge 6, because of its integral role in the original system, is included in the NHL property as a discontinuous element.

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**11. Form Prepared By**

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name/title: Ben Levy, Senior Historian; Paul Ghioto,  
Assistant  
organization: Division of History, Office of Archeology  
and Historic Preservation, National Park Service  
date: March 1973  
street & number: 1100 L Street NW  
city or town: Washington state: D.C.

**Revised By:**

name/title: Eliza E. Burden and Hugh B. McAloon,  
Architectural Historians  
organization: R. Christopher Goodwin & Assoc., Inc.  
date: December 1995  
street & number: 337 East Third Street  
telephone: (301) 694-0428  
city or town: Frederick state: Maryland  
zip code: 21701

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Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 et seq.).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18.1 hours per response including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P.O. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Project (1024-0018), Washington, DC 20503.

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Construction of the Washington Aqueduct, a water supply system for Washington, D.C., began in 1853 by the U.S. Army Corps of Engineers. Designed by Captain Montgomery C. Meigs, the system consisted of a 12-mile, underground conduit extending from the Great Falls of the Potomac River in Maryland to the District of Columbia (Figure 1). The Aqueduct system is 60 feet in width throughout most of its length, but widens at three locations: Great Falls, Dalecarlia Reservoir, and the Georgetown Reservoir. These three areas contain the majority of the above-ground resources constructed as part of the original Aqueduct system. The Aqueduct was designed as a gravity-fed system. A descent of nine inches every 5,000 feet allows water to flow through the conduit by gravity. To maintain this constant slope, the conduit required the construction of 11 tunnels, 26 culverts, and six bridges. Air vents, waste weirs, gatehouses, a receiving reservoir, and a distributing reservoir also were built as part of the original system. These support structures were integral elements of the Meigs plan.

The original system was designed to divert Potomac River water into the system at Great Falls. A dam was built to direct water into intake works located on the Maryland shore of the river. From there, the water flowed 10 miles through a nine-foot diameter masonry conduit (now referred to as the "old conduit") to a Receiving Reservoir at Dalecarlia Farms. This 50-acre Receiving Reservoir provided both a place for the turbid river water to settle, and a water storage site for times when the conduit was closed due to excessively muddy Potomac waters or for repairs. From the Receiving Reservoir, water was channeled through a two-mile extension of the conduit to a 36-acre Distributing Reservoir located on the western edge of Georgetown. This reservoir

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allowed for further sedimentation and served as a distribution point. From the Distributing Reservoir, water was delivered through cast-iron pipes to the city (Meigs 1853; Ways 1993:15-16; U.S. Army Corps of Engineers 1953:5-8). A high service reservoir constructed in Georgetown at High and Road Streets (now Wisconsin and R Streets) also was built as part of the Meigs plan. This High Service Reservoir was designed to supply water to the areas of Georgetown that were too high in elevation to receive water via the gravity-fed system. Water was pumped up 145 feet to this site by an hydraulic ram housed in the west abutment of a bridge constructed at Pennsylvania Avenue (Bridge 6) to carry water mains over Rock Creek Valley (Historic American Engineering Record 1992:1; Ways 1993:16). This high service reservoir no longer exists; the site now is occupied by the Georgetown Branch of the D.C. Public Library. Potomac River water was first delivered to the city of D.C. via the Washington Aqueduct in 1864.

As in the case of many cities, Washington's original water supply system was unable to meet the demand of its expanding service area. Subsequent additions to the Washington Aqueduct have included a second distributing reservoir (McMillan Reservoir); two water filtration plants to provide safer and cleaner water; a second conduit (the "new conduit") to increase the water-carrying capacity of the system; new high reservoirs to facilitate the delivery of water to areas of Washington at a higher elevation; and a supplemental intake facility at Little Falls (Figure 2). Unlike other municipal water systems, however, the original system has been expanded not replaced. The original Washington Aqueduct system remains largely intact and operational. The U.S. Army Corps of Engineers continues to own and operate the system.

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Today, much of the Washington Aqueduct is located below MacArthur Boulevard, a roadway established during the 1860s as Conduit Road, an access road for the conduit. Located along MacArthur Boulevard are some of the Aqueduct's above-ground resources such as brick air vents, bridges, and culverts. The area spanned by the Aqueduct gradually becomes more urban as the conduit proceeds eastward towards the city. Some of the system's original features have been concealed by subsequent development.

This nomination presents the Washington Aqueduct as a linear historic district consisting of a series of above-ground elements, in some cases miles apart, that are physically linked by a below-ground conduit. Rock Creek Bridge (Bridge 6), located southeast of the Georgetown Reservoir where Pennsylvania Avenue crosses Rock Creek, is included as a discontinuous element of the NHL district (Figure 3a-c).

A total of 73 built resources were identified within the NHL boundaries. Of these, 40 are considered to be contributing elements, while the remaining 33 elements are non-contributing resources. One of the contributing resources within the NHL boundaries, the Cabin John Bridge (WA31), is individually listed in the National Register. Another one of the buildings, the Castle Gatehouse (GR3), was included in the 1973 NHL designation of the Washington Aqueduct, but more recent archival research revealed that this building is not associated with the Meigs-era construction and therefore was not included as a contributing element of the NHL property. This building was listed individually in the National Register in 1973.

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In general, most of the resources classified as non-contributing were constructed during later periods of development and are not associated with the original construction of the Aqueduct. Only five Meigs-era resources were considered non-contributing due to lack of integrity. These included Brick Vent 2 (WA23), Culvert 23 (WA40), Culvert 24 (WA41), waste weir (WA43), and Culvert 26 (WA44). Evidence of the original design of these structures is concealed by subsequent modification. Other alterations are discussed in more detail in the resource-specific descriptions below.

The following discussion highlights some of the Washington Aqueduct's most important contributing resources. Included in each resource description are construction date, original and current use, architectural and engineering features, building materials, and resource integrity. Resource descriptions are organized according to location: Great Falls, Dalecarlia, Georgetown, and along the conduit path. Much of the resource-specific archival information was compiled from annual reports submitted to Congress by the Chief Engineer of the Corps of Engineers.

### Great Falls

The primary intake facility for the Washington Aqueduct is located along the Potomac River in Great Falls, Maryland. Figure 4 presents a map identifying the locations of built resources at Great Falls.

Construction at Great Falls began in 1853. The first structures at Great Falls were a rip-rap dam designed to direct water into the Aqueduct system; an intake facility along the Maryland

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shore of the river; and a gatehouse to control the flow of water into the conduit. During the 1870s a dwelling was constructed to house the Great Falls gatekeeper. All of these original resources survive with the exception of the original intake facility.

Gatehouse (GF2). The gatehouse at Great Falls was designed by Montgomery Meigs and was in operation by 1862 (Photograph 1). Gates within the gatehouse regulated the flow of water to the conduit. During periods when the water was especially turbid, the gates were closed. If increased pressure was necessary in the aqueduct system, the gates could be opened to allow a greater volume of water into the conduit. The gatehouse is no longer in operation.

*Description.* The gatehouse is a one-story, three-by-one bay structure occupying a rectangular plan. The building is constructed of coursed Seneca sandstone with quoins extending the height of the structure. A mansard roof sheathed in hexagonal slate shingles shelters the building. A metal door centered in the west elevation provides access to the building. There are no windows in the building. Four circular louvered copper vents are located in the dormers; one vent in each elevation. The mansard roof and round dormers effectively convey an association with the Second Empire style.

*Alterations.* The building originally was sheltered by a wooden gable roof with projecting cross gable. Annual reports filed by the Chiefs of the Aqueduct reveal that this roof was left exposed and rotted, as did the wooden gate structures within the building. In 1877, a metal cornice and mansard roof were constructed, and iron components were added inside the building to replace the deteriorated wooden structures.

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Gatekeeper Dwelling (GF4). The gatekeeper dwelling was built in 1875 to house the Great Falls gatekeeper. This was one of three caretaker residences constructed by the Aqueduct between 1874 and 1875. Other residences were built at the Receiving Reservoir (Dalecarlia Reservoir) and the Distributing Reservoir (Georgetown Reservoir). These three dwellings were built according to the same plan but using different materials, exemplifying the Army's early usage of standardized plans (Figure 5). As Quartermaster General of the Army, Montgomery Meigs encouraged the use of standardized plans at Army installations. Meigs hoped to control costs and to establish consistent construction standards at the expanding number of Army posts (Cannan 1994:440). The gatekeeper dwelling at the Georgetown Reservoir has been demolished; the dwelling at Dalecarlia (D) survives but is abandoned. The dwelling at Great Falls was transferred to the National Park Service ca.1970. The building now houses offices for Park Service officials.

*Description.* The gatekeeper dwelling is a two-story, "L" plan, stone structure constructed on a stone foundation. A mansard roof sheathed with wooden shingles shelters the building. Two brick interior chimneys rise above the roof plane. A one-story, flat-roofed porch occupies the crook of the "L" plan. Two building entries open onto the porch. Windows throughout the structure are two-over-two light, double hung, wooden sash units.

*Alterations.* A one-story, shed-roofed, frame addition supported by a concrete foundation was constructed on the south elevation. The walls of the addition are clad with German siding.

Great Falls Dam (WA1). Montgomery Meigs designed the Great Falls dam to divert Potomac water into the conduit. The dam was completed in 1863.

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*Description.* The current dam consists of a cut masonry head wall and a slope of stone rubble. The dam extends across the Potomac to the Virginia shore. The dam is angled upstream to minimize the impact of the river current on the dam's structural integrity.

*Alterations.* Constructed between 1857 and 1863, the original dam was a rip-rap structure. Between 1864 and 1867 the rip-rap dam was replaced with a solid masonry structure due to damage to the original structure caused by the sudden rise of the river level each spring. The masonry dam was extended to the Virginia shore between 1882 and 1886. During 1895 and 1896, the dam's lip was raised two feet to 150 feet above sea level. In 1928, "flash boards" were added to the lip of the dam to raise the contained water level to 151.5 feet above sea level, increasing flow throughout the Aqueduct system.

**Conduit Path (MacArthur Blvd.) and Other Miscellaneous Distribution Locations**

Although most of the Washington Aqueduct's above-ground resources are located in discrete functional clusters at Great Falls, Dalecarlia, and Georgetown, many of the system's resources are dispersed outside of these geographically compact entities, generally along the conduit path. Most of these original resources are intact.

Old Conduit (WA3). The original conduit was designed by Meigs to carry Potomac River water 10 miles from Great Falls to the Receiving Reservoir (Dalecarlia Reservoir), and then two miles from there to the Distributing Reservoir (Georgetown Reservoir). Branch by-conduits were established at each reservoir to allow the water to bypass the reservoirs and connect directly with

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the city distribution system, if necessary. The conduit, an integral part of the Meigs plan, was constructed between 1853 and 1864. Water flows by gravity through the conduit. The conduit continues to function as originally designed.

*Description.* The conduit consists of a circular brick channel and the materials that support the brick channel. The conduit maintains a constant descent rate of nine inches per 5,000 feet, and extends a total of 12 miles. Over the 12-mile length of the conduit, Potomac valley topography varies (Figure 6). Thus, to maintain the nine-inch-per-5,000 foot grade, three methods of construction were used: tunneling; cut-and-fill; and building on elevated fill. Eleven tunnels were excavated; all tunnels are bored through rock, and currently are lined with concrete. The cut-and-fill and elevated sections of conduit were constructed to conform to the same general characteristics; the brick conduit was constructed within a bed of rammed earth, which in turn rests upon a watertight layer. When impermeable rock was unavailable as a foundation, a layer of puddled clay was laid. Puddling is defined as the act of forming a compact mass that becomes impervious to water when dry (Merriam-Webster 1988). Upon the puddled or rock foundation, a column of rammed earth was constructed. The sides of the column sloped steeply upwards. The brick conduit was constructed within the upper portion of the rammed earth column. Next, earthen fill was deposited to cover the foundation and rammed earth column. The cut-and-fill and elevated sections differed in that cut-and-fill sections of the conduit simply required the excavation of a channel for the conduit and backfilling of the site once the conduit was in place. On the other

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hand, elevated sections of the conduit required the construction of a large earthen embankment.  
The fill protected the conduit from damage and frost.

Meigs' design for the conduit called for a channel that was circular in section, nine feet in diameter, and constructed with three courses of brick. As built, the channel's diameter varied from nine to eleven feet (U.S. Army Corps of Engineers, *Annual Report* 1896:3906).

By-conduits around the system's reservoirs varied from the main conduit design. The by-conduit around the Receiving Reservoir was constructed with a nine-foot diameter through most of its course, but 625 feet of this by-conduit was only eight feet in diameter. The by-conduit around the Distributing Reservoir was constructed with a seven-foot diameter.

A two-lane road, MacArthur Boulevard, was established during the 1860s as an access road for the conduit. The road extends along the top of the conduit's earth berm, defining the conduit path.

*Alterations.* Few alterations were made to the conduit during its early years of operation. Between 1869 and 1871, the by-conduit around the receiving reservoir was lined with brick, because the rock through which the unlined by-conduit passed was soft and spalling rapidly. In 1881, the head of the conduit between Dalecarlia and Georgetown was enlarged to create more pressure at the conduit entrance and cause the water to flow faster through the conduit.

The next alteration to the conduit was the lining of the system tunnels. Spalling rock falling into the conduit was noted as early as the 1870s. Between 1911 and 1913 a comprehensive

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effort was undertaken to line the tunnels with concrete. Presently, the application of gunnite to the entire conduit interior is a routine maintenance procedure.

The access road over the conduit (MacArthur Boulevard) also has been improved during the Aqueduct's operation. As early as 1868, the Chief Engineer of the Aqueduct noted that the conduit had become a heavily traveled artery between southern Montgomery County and Washington. To alleviate wear upon the conduit's earthen embankment by the heavy traffic, work began on macadamizing the road in 1871. Work progressed slowly; by 1885, the road between the Georgetown Reservoir and the Angler's Inn was paved. In 1892, the road was realigned to match exactly the path of the conduit channel. The adjustment was intended to prevent wagons straying from the macadam road from damaging the conduit embankment during the wet spring season. In 1974, recognizing the importance of the conduit access road as a county transportation artery, maintenance and policing of the road was turned over to Montgomery County (U.S. Army Corps of Engineers, *Dalecarlia Master Plan* 1983:7).

Culverts (WA5, 9, 11-19, 21, 22, 26-29, 32, 34-36, 38, 40-42, and 44). Structures constructed on an earthen foundation possess greater stability, and are less costly to maintain, than structures maintained above grade. Therefore, when crossing small stream valleys engineers often prefer to import fill and create an artificial earthen foundation, rather than erect a bridge. Culverts are just such structures. They serve two functions in the Aqueduct: to support the conduit as it crosses small stream valleys, and to allow existing streams to follow their natural course without eroding the conduit. A total of 26 masonry culverts were built between 1854 and

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1856 as part of the Meigs plan (Figure 7). Similar masonry culverts were designed by Engineer John B. Jervis for the Croton Aqueduct in New York (Lange 1991:5).

*Description.* Culverts of Meigs' design were constructed of brick, with coursed ashlar headwalls. Like Meigs' bridges, Seneca sandstone typically was used in the construction of the culvert headwalls. Culvert dimensions varied; width and height were determined by the potential volume of water and debris that channeled body of water might carry during an average flood. Some of the culverts were designed with stepped sides and act as embankment walls. Others were capped with flat slabs of stone and covered in earth. Culvert 12, which spans Rock Run, is the largest culvert designed for the system and survives fully intact (Photograph 2).

*Alterations.* During the mid-1920s, a second conduit (the "new conduit") was constructed within the Aqueduct's original corridor. While some of the 1850s culverts possessed sufficient width to carry the new conduit, many of the culverts were extended. To expand the culverts, Aqueduct engineers simply added poured concrete tunnels that matched the height and width of the 1850s structures. New culvert headwalls were constructed of concrete, and lack ornamentation (Photograph 3).

Waste Weirs (WA43). Three waste weirs were constructed between 1855 and 1858 as part of the original conduit system. Waste weirs served two functions: to provide gates through which sections of the conduit could be de-watered quickly, and to provide blowoff points in the system should water pressure within the conduit channel build to dangerous levels. A section of the conduit could be drained by putting wooden stop planks across the conduit at the upstream waste

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weir, and opening the gates in the downstream weir. Waste weirs allowed a portion of the conduit to be drained without interrupting the entire system.

*Description.* Waste weirs consisted of a two-doored, wooden framed gate set in the conduit channel wall, a gate chamber abutting the conduit channel exterior, and a tunnel leading from the gate chamber to a nearby creek, into which conduit water was discharged. Conduit gatekeepers accessed the waste weir gates via wooden catwalks constructed in the discharge tunnels.

*Alterations.* During the 1890s rotting wooden structural members were removed and replaced with iron framing. In ca. 1910, iron sluice gates replaced the original gates in the weirs. Valve mechanisms in the weirs were motorized during the 1940s; however, these motors have since been abandoned.

Bridges (WA6, 7, 24, 30, 83). Bridges were incorporated into the Washington Aqueduct system for the purpose of transporting the Aqueduct over valleys. Six bridges, identified as Bridges 1-6, were designed by Meigs. Four of these were built between Great Falls and the Distributing Reservoir; two bridges (Bridges 5 and 6) were located east of the Distributing Reservoir and were designed to convey iron water mains across Foundry Branch and Rock Creek.

*Description.* Bridges 1-4 are single span masonry bridges constructed of Seneca sandstone. The spring arch of the bridges range in dimension from 14 feet (Bridge 1) to 220 feet (Bridge 4 - Cabin John Bridge). The beltcourse, voussoirs, and keystone of each bridge are constructed of a more finely dressed sandstone. Bridge 3 (the Griffith Park Bridge) was designed

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by Montgomery Meigs and Charles Talcott to carry the old conduit across Mountain Spring Branch (Photograph 4). The Cabin John Bridge (originally known as the Union Arch) carries the old conduit across Cabin John Creek (Photograph 5). Meigs designed the bridge with Alfred Rives. Between 1864 and 1903, the Cabin John Bridge was the longest single span masonry arch in the world. The bridge was listed in the National Register of Historic Places in 1973.

Bridges 5 and 6 were designed by Meigs as single span iron bridges to carry the Aqueduct's two original 48-inch iron distribution mains across Foundry Branch and Rock Creek (Photograph 6). Bridge 5 consisted of the two arched water mains anchored within granite abutments on either side of Foundry Branch. Bridge 5 is no longer visible; it has been buried beneath fill. Bridge 6 was designed with a similar configuration. The iron mains of Bridge 6 served as the supporting elements for a road deck carrying Pennsylvania Avenue over Rock Creek. A pump situated in the west abutment of Bridge 6 pumped water to the high service reservoir in Georgetown. The pump was powered by the flow of water through the Aqueduct. The design of Bridge 6 was altered dramatically in 1916. Bridge 6 presently exists as a 200-foot single arch concrete structure clad in smooth granite block facing (Photograph 7). On the bridge deck are a roadway, sidewalks, and balustrade. The roadway is 50 feet wide and paved with asphalt. The 10-foot wide sidewalks are constructed of poured concrete, and flank the roadway. A balustrade extends the length of each sidewalk. Although the bridge has been altered, the original pipes continue to carry water. The original Aqueduct pipes are visible on the underside of the bridge (Photograph 8).

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*Alterations.* Alterations to the masonry bridges have been minimal. Roadways and stone parapets were added to both Bridge 3 and the Cabin John Bridge (Bridge 4) during the 1870s to accommodate traffic on the bridge deck. During the 1980s, the deteriorated stone parapet on the Cabin John Bridge was replaced with cast concrete colored to resemble the Seneca sandstone.

Alterations to the iron bridges (Bridges 5 and 6) have been more severe. Bridge 5 has been buried, and Bridge 6 has been reconstructed. In 1916, the iron portions of the Bridge 6 were dismantled, except for the water mains, and a concrete bridge faced with granite was erected in its place. The Meigs bridge was replaced because it was only 17 feet wide and could not accommodate the increasing amount of traffic; the new reinforced concrete structure was designed to carry a heavier traffic load.

Brick Vents (WA10, WA23, WA37). Air vents were incorporated into the conduit to maintain water "freshness," and encourage sedimentation during the passage from Great Falls to Dalecarlia. Four vents were constructed in 1873 along the conduit path; only two (WA10 and WA37) retain their original design. New York's Croton Aqueduct also incorporated air vents, one every mile (Lange 1991:5).

*Description.* WA10 and WA37 are one-story, brick structures with an octagonal plan (Photograph 9). Pavilion roofs shelter the structures. Metal vent grates occupy the peaks, and approximately one-half, of the roof surfaces. The vents incorporate wooden Italianate style cornices. Brick walls are painted red. No entries or windows are located in the vent elevations.

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WA23, one of the vents that no longer retains its original design. It has been replaced with a four-foot tall concrete structure.

*Alterations.* Vents WA10 and WA37 appear unaltered. Vent WA23 appears to have been replaced with the current concrete structure during the construction of the Capital Beltway.

**Dalecarlia Reservoir**

The Dalecarlia Reservoir straddles the D.C./Maryland border. Figure 8 presents a map identifying the locations of built resources at Dalecarlia. Only the property on the east side of MacArthur Boulevard is included in the NHL boundaries.

The reservoir basin (Receiving Reservoir), created by damming Powder Mill Creek between 1854 and 1858, was the first feature established at Dalecarlia. By 1859, a sluice tower (WA51) and effluent gatehouse (no longer extant) were completed and the system between Dalecarlia and the city of Washington became operable, fed by Powder Mill Creek and Little Falls Branch.

Between 1864 and 1867, a by-conduit was constructed to allow Potomac water to bypass the Receiving Reservoir and flow directly to Washington if waters in the reservoir were more turbid than the water arriving directly from the river. In 1875, a brick dwelling (DS37) was constructed on a hill overlooking the reservoir and Conduit Road. This dwelling was intended to house the gatekeeper at the Receiving Reservoir.

Concern over the reservoir's water quality led to the abandonment of the reservoir in 1888. Instead, water was channeled through the by-pass conduit directly to the system's Distributing

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Reservoir. To alleviate pollution concerns, between 1894 and 1895 a system of open channels was established around the Dalecarlia Reservoir to divert the tributaries of Powder Mill Creek that formerly fed the reservoir. When the diversion channels were completed, the reservoir was reintegrated into the Aqueduct system.

During the 1920s, Dalecarlia became the site of Washington's second filtration plant. Most of the construction associated with the development of this filtration plant occurred on the west side of MacArthur Boulevard, removed from the reservoir itself. Once the filtration plant was in operation, the Dalecarlia Reservoir fed both the Distributing Reservoir and the Dalecarlia filtration plant. The Dalecarlia Treatment Plant is not included in the Washington Aqueduct NHL District boundaries.

Abandoned Dwelling (DS37). In 1875, a permanent dwelling was completed at the Dalecarlia Reservoir to house the reservoir gatekeeper. This is one of three caretaker residences constructed by the Aqueduct between 1874 and 1875. Other residences were built at Great Falls and the Distributing Reservoir (Ways 1993:107). These three dwellings were built according to the same plan but using different materials, exemplifying the Army's early use of standardized plans. As Quartermaster General of the U.S. Army, Montgomery Meigs encouraged the use of standardized plans at Army installations. Meigs hoped to control costs and to establish consistent construction standards at the expanding number of Army posts (Cannan 1994:440). The caretaker dwelling at Dalecarlia currently is abandoned.

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*Description.* The dwelling is a two-story, "L" plan, brick structure constructed on a concrete foundation. The building was designed in the Second Empire style (Photograph 10). Building walls are brick coursed in 6:1 American bond. Scrolled brackets support a dentilled cornice. A mansard roof sheathed with slate shingles shelters the building. Two brick interior chimneys rise above the roof plane. A one-story, shed-roofed porch occupies the crook of the "L" plan.

*Alterations.* A two-story, wood-frame addition was built on the east (rear) elevation. German siding clads the addition walls. A hip-roofed porch wraps around the east and south elevations of the addition.

Receiving Reservoir (WA47). WA47 was created by damming Powder Mill Creek between 1854 and 1858. Montgomery Meigs designed the Receiving Reservoir as a settling area for the Potomac water, where excess sediments in the water could settle before the water continued on into the distribution system. Potomac water entered the west end of the reservoir and exited at the east end. Little Falls Branch, Powder Mill Creek, and East Creek also fed the reservoir. The Receiving Reservoir was first officially referred to as the "Dalecarlia Reservoir" in 1893.

*Description.* The Dalecarlia Reservoir is located on the east side of MacArthur Boulevard. The reservoir is divided into two parts: the forebay (three acres), where water enters the reservoir; and the remainder of the reservoir (44 acres). The shore is paved with rip-rap. Several structures related to the influence and effluence of water in the reservoir are located along the reservoir shore.

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*Alterations.* During 1871 and 1872, the bare earthen walls of the Receiving Reservoir were lined with rip-rap to prevent erosion. Erosion not only damaged the reservoir walls, but also sullied the water within the reservoir.

By 1888, the tributaries that naturally fed the Receiving Reservoir, Powder Mill Creek, Little Falls Branch, and East Creek, were recognized as sources of reservoir pollutants and the reservoir was taken out of service. The by-pass conduit was utilized to divert water around the reservoir. During 1894 and 1895, a series of channels and dams were constructed to divert the tributaries from the Receiving Reservoir, and the reservoir was again reintegrated into the Aqueduct system.

During the 1930s, the reservoir was altered by the construction of an earthen dam (WASO) in the western portion of the basin. The Booster Control Station (D6) was built on this dam in 1933 (Ways 1993: 165).

Sluice Tower (WA51). The Sluice Tower was completed by 1858. This tower is situated in the southern end of the reservoir and is surrounded by water (Photograph 11). The structure is situated above a tunnel that leads to the Little Falls Branch drainage. Gates within the tower wall were opened by vales located within the tower. The sluice tower enabled the Dalecarlia gatekeeper to accelerate emptying of the reservoir for maintenance purposes, and provided an additional emergency release during periods of high water. Though the Receiving Reservoir dam had a spillway to prevent overfilling the reservoir, the addition of the sluice tower ensured that water would not cross the dam lip. Earthen dams are most susceptible to erosion when water is allowed to cross the lip.

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*Description.* The Sluice Tower extends one-story above the Dalecarlia Reservoir's water level. The building has an octagonal plan and is constructed of stone. An entablature of stone defines the roof line. The building terminated in a pavilion roof sheathed in fishscale slate shingles. An urn crowns the roof peak. No windows punctuate the building walls. A single entry is located on the tower's northeast elevation. An iron ladder extends from the entry into the water. An inscription on the west elevation reads:

"Washington Aqueduct. Built by order of the Congress of the United States for bringing water into Washington. Begun A.D. 1853 on the 8th day of November. Water delivered in Washington from this reservoir A. D. 1859, on the 3rd day of January. From the Potomac River A. D. 1863 on the 5th day of December. 151 feet above 0 of the Washington Aqueduct, or 150 feet above ordinary high water at Washington. A. D. 1858. Captain M. C. Meigs, Chief Engineer.

**Georgetown Reservoir**

The Georgetown Reservoir occupies approximately 65 acres in northwest Washington. The facility consists of only seven built resources. Figure 9 presents a map identifying the locations of built resources at the Georgetown Reservoir.

The first construction at the Georgetown facility was the reservoir basin (WA61), which was excavated between 1862 and 1864. Originally, this reservoir was designed as the Distributing Reservoir, where water was stored before distribution to the city. Influent and Effluent Gatehouses were built to control the flow of water in and out of the reservoir; only the Influent Gatehouse

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(GR1) survives. In 1875, a dwelling was built at the Distributing Reservoir for the gatekeeper; this building no longer survives.

One building, the Castle Gatehouse (GR3), often is mistaken for one of the original resources designed by Meigs. This castellated structure was constructed in 1901 in association with the new Washington City Reservoir and Tunnel, the first major expansion to the Aqueduct. The Castle Gatehouse regulates the flow of water from the Georgetown Reservoir into the City Tunnel. The building was listed in the National Register in 1974.

Influent Gatehouse (GR1). GR1 was constructed between 1864 and 1872 to regulate the flow of water into the Distributing Reservoir from the Receiving Reservoir. The gates in the building could also be adjusted so Dalecarlia water flowed into the Distributing Reservoir by-pass conduit rather than the reservoir.

*Description.* GR1 is a one-story, concrete, octagonal plan structure constructed on a granite sill foundation. (Photograph 12). Stucco on the building walls is scored to resemble cut stone. A plain cornice defines the roofline. A concrete dome shelters the interior. A wooden double door is located in the west elevation. No windows punctuate the building walls.

Pipe Vault (GR7). GR7 is the stairwell that leads to the pipe vault where the old city water mains are located. The pipe vault is a brick-lined barrel vault constructed between 1862 and 1864. A 12-inch, a 30-inch, and two 48-inch iron mains lead through the pipe vault from the Effluent Gatehouse to the city distribution system.

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*Description.* GR7 is a one-story, brick, hexagonal plan structure constructed on a Seneca sandstone foundation. Brick walls coursed in 6:1 American bond rise from the foundation to terminate at a dome roof. The wall exterior is stuccoed and scored to resemble cut stone. A metal entablature defines the roofline. No windows punctuate the building elevations. A single door is located in the northeast elevation. A transom infilled with stucco is situated above the door. A metal spiral staircase descends into the pipe vault. Each riser bears the inscription "M.C. Meigs" (Photograph 13). The pipe vault itself is a brick barrel vault, and extends the width of the dam embankment.

*Alterations.* The pipe vault was a small ovular chamber prior to 1890. By 1890, the existing pipes were leaking into the dam embankment. To prevent erosion, the vault was extended the width of the embankment. During the twentieth century, electric lighting was installed within the pipe vault.

Reservoir Basin (WA61). The Georgetown Reservoir Basin was begun in 1862, useable by 1864, and completed in 1873 when the interior walls were finally lined with stone paving to prevent erosion (Figure 10). The Georgetown Reservoir was originally designated the Washington Aqueduct's Distributing Reservoir. Water was transported to this reservoir from the Receiving Reservoir at Dalecarlia. Like the Receiving Reservoir, the Distribution Reservoir provided an opportunity for sediment to settle out of the water. From the Distributing Reservoir, water was sent through pipes directly into the city's distribution system. The mains to the city were turned off in August 1905. After that date, all water held within the reservoir proceeded directly to the McMillan

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Reservoir and Filtration Plant where it was filtered. The Georgetown Reservoir continues to serve as a settling reservoir for the McMillan facility.

*Description.* The Georgetown reservoir is an artificial basin created through the construction of earthen walls on a rectangular plan. An earthen embankment divides the reservoir into northern and southern basins. The northern half is also divided.

*Alterations.* In 1864, the basin dividing wall was raised to the height of the outer walls; water flowed from the north basin to the south basin through a gate in the wall. During the 1940s, a cement floor was installed in the basin to allow deposited sediments to be collected with plows. Also, a series of baffle walls were constructed to improve sedimentation. These proved to be ineffective and were later removed (Ways 1993:176). A concrete wall later was added to divide the north basin.

**Integrity**

The Washington Aqueduct system, as a whole, retains a high-level of integrity. Most early American water systems of this type, such as New York's Croton Aqueduct and Boston's Cochituate Aqueduct, are no longer in service. Washington's system remains in use and, despite expansions and equipment upgrades, operates according to Meigs' original design.

While most of the above-ground buildings and structures, such as the gatehouses and bridges, still retain their integrity, other resources such as the culverts have been modified. Most of the changes to the culverts occurred during the 1920s when a new conduit was added. Since

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the new conduit paralleled the old conduit, the existing culverts were extended to accommodate the combined width of the conduits. These extensions obscure the 1850s culvert elements along the river side. Due to these extensions, the original stone faces are generally only visible on the north side of the culverts. Nonetheless, these culverts were assessed as contributing elements.

Rock Creek Bridge (Bridge 6), the only discontinuous element of the NHL property, is the component of Meigs' system that has undergone the most significant alteration. Bridge 6 was designed to carry the Aqueduct's water across Rock Creek into the Federal City. The bridge originally was cast-iron; the two large cast-iron pipes not only carried water across the valley but served as arches supporting the bridge structure. It was one of the first large cast-iron bridges in the country. In 1916, the bridge was modified to accommodate twentieth century traffic. The current bridge is a single span concrete arch structure with granite facing; the original Aqueduct pipes were retained and are visible on the underside of the bridge. The pipes continue to transport water. Although this bridge does not retain its original appearance, the bridge does retain its engineering integrity and therefore was included as a contributing element within the Washington Aqueduct NHL district.

The following table presents all built resources located within the defined boundaries of the Washington Aqueduct NHL property. The table is organized according to geographic location (Great Falls, Conduit Path, Dalecarlia Reservoir, and Georgetown Reservoir). Resources assessed as contributing are indicated by a "Y" in the Status column; those evaluated as non-contributing are indicated by an "N."

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RESOURCE NO.	DATE	BUILDING NAME	ORIGINAL USE	STATUS
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**Great Falls - Maryland**

WA1**	1854-1928	Great Falls Dam	Dam	Y
GF2**	1869	Gatehouse	Gatehouse	Y
GF4*	1875	Caretaker House	Gatekeeper dwelling	Y
GF5*	1956	Park Ranger Dwelling	CoE personnel qtrs.	N
GF6*	1956	Ranger Station	CoE personnel qtrs.	N
GF7	1970	Intake Structure	Intake house	N
WA2	ca. 1960	Shed	Shed	N
GF-S-3*	1941	Garage	Vehicle storage	N

**Conduit Path (MacArthur Blvd.) and other Miscellaneous Distribution Locations -  
Maryland/Washington, D.C.**

WA3**	1853-1856	Old Conduit	Conduit	Y
WA4	1922-1928	New Conduit	Conduit	N
WA5	1856	Culvert 1	Culvert	Y
WA6	1857	Bridge 1	Bridge 1	Y
WA7	1857	Bridge 2	Bridge 2	Y
WA8	1920s	Cross Connection 1	Cross connection	N
WA9	1856	Culvert 2	Culvert	Y
WA10**	1873	Brick Vent 1	Air vent	Y
WA11	1855	Culvert 3	Culvert	Y
WA12	1855	Culvert 4	Culvert	Y
WA13	1855	Culvert 5	Culvert	Y
WA14	1855	Culvert 6	Culvert	Y
WA15	1855	Culvert 7	Culvert	Y
WA16	1855	Culvert 8	Culvert	Y
WA17	1856	Culvert 9	Culvert	Y
WA18	1856	Culvert 10	Culvert	Y
WA19	1856	Culvert 11	Culvert	Y

\* = Properties constructed as part of the Aqueduct, but no longer owned by the Washington Aqueduct.

\*\* = Identified in the original 1973 NHL documentation as contributing to the NHL.

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WA20	1922-1928	Cross Connection 2	Cross connection	N
WA21	1856	Culvert 12	Culvert	Y
WA22	1856	Culvert 13	Culvert	Y
WA23**	1873	Brick Vent 2	Air vent	N
WA24**	1858	Griffith Park Bridge	Bridge 3	Y
WA25	1920s	Griffith Park Culvert	Culvert	N
WA26	1856	Culvert 14	Culvert	Y
WA27	1856	Culvert 15	Culvert	Y
WA28	1856	Culvert 16	Culvert	Y
WA29	1856	Culvert 17	Culvert	Y
WA30**	1864	Cabin John Bridge	Bridge 4	Y
WA31	1922-1928	Cabin John Syphon	Syphon	N
WA32	1856	Culvert 18	Culvert	Y
WA33	1922-1928	Cross Connection 3	Cross connection	N
WA34	1855	Culvert 19	Culvert	Y
WA35	1855	Culvert 20	Culvert	Y
WA36	1855	Culvert 21	Culvert	Y
WA37**	1873	Brick Vent 3	Air vent	Y
WA38	1855	Culvert 22	Culvert	Y
WA39	1910/1940	Gatehouse	Blowoff tunnel gatehse	N
WA40	1856	Culvert 23	Culvert	N
WA41	1856	Culvert 24	Culvert	N
WA42	1856	Culvert 25	Culvert	Y
WA43	1856	Waste Weir No. 3	Waste Weir	N
WA44	1858	Culvert 26	Culvert	N
WA83*	1862/1916	Rock Creek Bridge	Bridge 6	Y

**Dalecarlia Reservoir - Maryland/Washington, D.C.**

WA47**	1854-1858	Dalecarlia Reservoir	Receiving Reservoir	Y
WA48	1893-1895, 1973	Diversion channels	Diversion Channels	N
WA49	1959	Little Falls Outfall	Little Falls outfall	N

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WA50	1933	Cross-reservoir dam	Dam	N
D4	1939	Storage	Storage	N
D5	1935	Booster Control Stn.	Booster control stn.	N
WA51	1858	Sluice Tower	Sluice tower	Y
D6	1935	Booster Pump Station	Booster pump station	N
D7	1959	Intake Gatehouse	Intake gatehouse	N
D8	1939	South Screen Building	Screen building	N
DS32	1950	Storehouse	Storehouse	N
DS36	ca. 1900	Garage	Unknown	N
DS37	1875	Abandoned Dwelling	Caretaker house	Y
DS42	ca. 1950	Transformer House	Transformer house	N
DS45	1954	Storage	Storage	N

Georgetown Reservoir - Washington, D.C.

WA61**	1862-1873	Georgetown Reservoir	Distributing reservoir	Y
GR1	1872	Gatehouse	Influent gatehouse	Y
GR3	1901	Castle Gatehouse	Gatehouse	N
WA62	1872	Platform	Effluent gatehouse	N
GR7	1872	Pipe Vault	Pipe vault access	Y
GR8	1890	Pipe Vault Well	Lighting well	N
GR9	1901	West Shaft House	West shaft house	N

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The original Washington Aqueduct system is nationally significant under NHL Criteria 1 and 4. Under Criterion 1, the system is representative of the national pattern in nineteenth century public works in which public water systems were introduced as part of municipal services. The system is significant under NHL Criterion 4 for its design by Montgomery C. Meigs, an important nineteenth century architect-engineer.

The period of significance for the Washington Aqueduct NHL is defined as 1853 to 1880. The period extends from the approval to the completion of the Meigs plan for the water system. Although Meigs' direct involvement in the project lasted only until 1862 when he was appointed Quartermaster General of the U.S. Army, his plans were carried out by his successors with only minor modifications. The NHL period of significance includes those resources designed as part of Meigs' plan but built after his departure.

**Establishment of the Washington Aqueduct System 1853-1880**

During the eighteenth and nineteenth centuries, District of Columbia residents procured water from springs, wells, or cisterns scattered throughout the region. By the 1850s, due to rapid population growth in the city, these sources were insufficient, especially for fire protection. A more reliable supply of water became necessary.

Congress addressed the problem in 1850 with an appropriation of \$500 to conduct a survey of potential municipal water sources (Hellman 1983:11; Ways 1993:4). The modest appropriation financed only a study of Rock Creek as a potential source. The resulting report

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estimated that if Rock Creek was dammed for use as Washington's primary source of water, the creek could provide approximately eight million gallons per day, a volume considered far below that necessary to supply the rapidly growing city. Congress responded by financing a more comprehensive study of potential water sources. In 1852, Congress provided an additional \$5,000.00 for a second survey (Ways 1993:5).

On the recommendation of General Joseph G. Totten, Chief of the U.S. Army Corps of Engineers, this second survey was conducted by Montgomery Meigs (Photograph 14). Within three months, Meigs had completed his survey and submitted a 55-page report to General Totten. Unlike the first study, Meigs' report addressed the *future* water needs of the city. He investigated three water sources -- Great Falls, Little Falls, and Rock Creek. In his report, Meigs described the advantages and disadvantages of each source, ultimately concluding that Great Falls would be the most logical choice due to its ample water supply, as well as its geographic relationship to the city. Meigs' report to Congress was received favorably and approved in March 1853 (Ways 1993:7-13). Plans and specifications for the water system got underway immediately.

In developing his plan for the Washington Aqueduct, Meigs investigated both New York's Croton Aqueduct and Boston's Cochituate Aqueduct. Meigs developed a concept similar to these systems, incorporating an underground conduit to carry the water, and a receiving reservoir and distributing reservoir to allow sediment to settle out of the water before distribution. Meigs' plan called for a 10-mile brick conduit to carry the water from Great Falls to the Receiving Reservoir, and a two-mile extension of the conduit to convey the water from the Receiving Reservoir to the

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Distributing Reservoir. Cast-iron mains were incorporated to deliver the water from the Distributing Reservoir to the city. Eleven tunnels, 26 culverts, and six bridges were constructed to ensure that the Aqueduct maintained a consistent downward descent.

Limited development existed in the Potomac Valley at the time of the Meigs survey. The most significant improvement in the area was the Chesapeake and Ohio (C&O) Canal. By 1831, the canal had been completed between Georgetown and Seneca, providing an important link between the District of Columbia and western markets. Although the canal never became the intended all-water route to the Ohio River and the west, it did bring commercial progress to the Potomac Valley, and provided a major economic boost to local farmers (Hiebert and MacMaster 1976:101). Canal boats transported wheat and corn meal to Georgetown, and returned with fertilizer and other supplies to county farms (Sween 1984:50). The canal not only benefitted area farmers, but it also spurred the development of small commercial and industrial enterprises along the Potomac River. The quarry industry was particularly important in the area, exploiting local deposits of blue stone, limestone, red Seneca sandstone, slate, marble, and granite (Unrau 1976b:1-2; Wesler et al. 1981:169). Work on the canal ended in 1850.

The C&O Canal not only provided Meigs with initial access to Great Falls, but it also played an important role in the construction of the Aqueduct. Construction of the different elements of the Aqueduct required a variety of building materials, including brick, sand, cement, cast iron pipe, and a myriad of valves and fittings. Typically, these items were delivered by schooner to the Washington Aqueduct Wharf at 27th Street in Georgetown, which was built

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specifically to accommodate supply deliveries during construction of the Aqueduct. From there, the materials were transported to the required construction sites by boats using the C&O Canal, located parallel to the conduit (Ways 1993:32-33; Levy and Ghioto 1973). The canal also facilitated the delivery of building materials originating north of the site. These included sandstone quarried at Seneca, Maryland, nine miles north of Great Falls. This sandstone was used in the construction of the culverts, gatehouses, and bridges.

Under Meigs' supervision, construction of the Aqueduct began in November 1853. However, due to lack of funding, difficulty in obtaining land, political disputes, and delays caused by the Civil War, construction lasted nearly 11 years (Ways 1993:10). Water from the Potomac first reached the city via the Washington Aqueduct in July 1864.

Meigs' supervision of the Aqueduct project came to an end in June 1861 when President Abraham Lincoln appointed him Quartermaster General of the U.S. Army. Although this appointment marked the end of his formal involvement with the Aqueduct, Meigs remained actively interested in and committed to the project until his death in 1892. By the time of Meigs' new appointment, the only portions of the Aqueduct system that were actually in place and operational were the Receiving Reservoir, the Rock Creek Bridge, and the Georgetown High Service Reservoir. The Cabin John Bridge was under construction, work at Great Falls had just begun, and the Distributing Reservoir had yet to be built (Ways 1993:96-7). Despite the departure of Meigs, work proceeded on the Aqueduct according to his plans.

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Chief Engineer William R. Hutton assumed supervision of the project for one year following Meigs' departure, and was succeeded by Chief Engineer Silas Seymour, who supervised construction from July 1863 to 1865. Under Seymour's supervision, water from the Potomac first reached the city via the new Aqueduct. After 11 years of construction, the Aqueduct first delivered water to the city of Washington in July 1864.

**Continued Growth of the Washington Aqueduct**

Since its establishment, the Washington Aqueduct system has undergone a series of upgrades and expansions to meet the demands of Washington's increasing population. The first expansion to the Washington Aqueduct occurred during the 1880s when Congress authorized the creation of a second distributing reservoir to improve water service to the eastern areas of the city. The site chosen for this new "Washington City Reservoir," was in the northwest section of the District of Columbia, in the vicinity of Howard University. Excavation began on the new reservoir in 1885 and was completed in 1888. A four-mile tunnel -- the Washington City Tunnel -- was constructed to link the new reservoir to the existing Washington Aqueduct system via the Georgetown Reservoir. The new reservoir, later named McMillan Reservoir, went into operation when the tunnel finally was completed in 1902 (Martin 1990:24).

The next upgrade to the Washington Aqueduct was the addition of a filtration system. During the 1880s and 1890s the threat of disease, such as dysentery, cholera, and typhoid fever,

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mandated the need for an effective water filtration system. A study of filtration systems was initiated in 1898, and eventually resulted in the establishment of a slow sand filter plant on land adjacent to the new (McMillan) reservoir. The filtration plant became operational in 1905 (Kanarek 151; Ways 1993:149).

The most ambitious expansion of the Washington Aqueduct occurred in the 1920s when a second conduit (now referred to as the "new conduit") and a second water filtration facility were added. The new conduit was constructed of concrete and ran parallel to the original conduit. The old and new conduits were interconnected at three locations so that sections could be drained for inspection or repair without shutting down the entire system. The new water filtration facility was established at Dalecarlia and consisted of a rapid sand filtration plant. This plant was intended to supplement, not replace, the original slow sand filter plant. These expansions to the system effectively doubled the city's reserves of potable water (Kanarek 151).

In 1926, the service area of the Washington Aqueduct was expanded when Congress approved the sale of water to Arlington County, Virginia. To convey the water to Virginia, a 24-inch water main was built from the Dalecarlia Treatment Plant across the Chain Bridge to connect with the Arlington County system (Ways 1993:163).

The latest major expansion of the Washington Aqueduct occurred during the 1950s. In 1940, the population serviced by the Aqueduct totaled over 720,000; by the end of World War II, the population had skyrocketed to over one million. Anticipating continued growth of the city, Congress commissioned a study of future water needs for Washington. The resulting report,

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commonly known as "The 480 Report," was submitted to Congress in 1946, and presented a plan to meet the projected water needs of the city through the year 2000. A variety of projects were implemented as a result of this report. At Dalecarlia, new flocculation-sedimentation basins, an additional clear water reservoir, and a new pumping station were constructed. At Little Falls, an entirely new complex was established as a supplemental raw water source that could be utilized when the water from Great Falls was insufficient to meet demand, or if one of the main conduits failed. Unlike the gravity-fed intakes at Great Falls, Little Falls is powered by electric pumps (Ways 1993:178-84).

Other recent improvements to the Aqueduct system have included the construction of the new intake structure at Great Falls in 1967 and the new chemical and filter building at McMillan Reservoir during the 1980s. When the new facility at McMillan went into operation in 1986, all of the original slow sand filter beds were abandoned.

Throughout the years, the Washington Aqueduct has been expanded and upgraded as demand required. These changes ensured that the Washington Aqueduct continued to provide an adequate and high-quality water supply to its service area.

**Waterworks Context**

The development of public water supply in America began as early as the seventeenth century. The first water system constructed in the 13 English colonies was established in Boston

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in 1652. The collected water was intended for fire fighting and the suppression of road dust, rather than public consumption (LaNier 1976:174).

The first system in the 13 colonies to deliver water to individual houses was established in 1752 in Bethlehem, Pennsylvania. A pump drew water from a nearby creek and delivered it to a water tower erected on the crest of a hill. From the tower, the water was fed to several distribution tanks. Wooden pipes extended from the distribution tanks to individual homes. The wooden pipes leaked profusely, and experiments were made with other materials. In 1813, Bethlehem was the first in the United States to utilize cast iron distribution pipes. The system attracted interest throughout the colonies. Representatives from other colonies visited Bethlehem to inspect the system and its operation (Schodek 1987:196-197).

The first major American city to establish a public water distribution system was Philadelphia in 1801. The Philadelphia waterworks was designed to provide the quantities of water needed to improve public health. The system drew water from the Schuylkill River. By 1814, the original system could not provide volumes sufficient for the city's increasing needs. A new waterworks was established on the banks of the Schuylkill below Fairmount Hill. Steam driven pumps delivered water to a reservoir on Fairmount Hill, from which the water flowed by gravity through brick conduits into the city.

In 1829, engineer Albert Stein introduced a concept that later became standard in American waterworks for the remainder of the century: the settling basin. Stein constructed a

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settling basin as part of the Lynchburg, Virginia waterworks. The settling basin allowed sediment to settle from river water prior to distribution.

Philadelphia's water system remained the nation's premier system until the 1840s, when New York constructed the Croton Aqueduct, which linked New York City with the Croton River, 41 miles to the north. Major David Douglass was the first engineer hired to construct the aqueduct. However, after making little progress over a three-year period, Douglass was replaced by engineer John B. Jervis in 1836. The gravity-fed system consisted of a dam built across the Croton River to impound water, and a 40-mile brick conduit to carry water to New York City. The Croton Aqueduct began service in 1842 (Lange 1991; Schodek 1987:206).

The Croton Aqueduct was hailed as an engineering marvel and spurred the establishment of systems in other U.S. cities. By 1850, 85 U.S. communities possessed water systems (LaNier 1976:174). The largest cities with waterworks were Boston, Chicago, Cincinnati, Philadelphia, Pittsburgh, Richmond, and St. Louis (Lange 1991:17). Between 1850 and 1860, 55 new systems were established (Turneaure and Russell 1924:9). Large municipalities that established waterworks during this period included Washington, D.C.; Brooklyn and Buffalo, New York; and Cleveland, Ohio (Lange 1991:17). The Croton Aqueduct was designated a National Historic Landmark in 1990.

Boston's Cochituate Aqueduct was another important mid-nineteenth century municipal water system. This gravity-fed system was started in 1846 and modeled upon the Croton Aqueduct. Noted engineer Loammi Baldwin designed the system. Water first coursed through

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the system in 1848. The aqueduct carries water eastward from Lake Cochituate in Wayland, Massachusetts to Boston via a 14.5-mile long enclosed conduit. In Boston, the water first entered a receiving reservoir in Brookline. After 1870, water flowed from the receiving reservoir to a distributing reservoir at Chestnut Hill, in the Brighton section of Boston. The Cochituate Aqueduct was removed from service in 1940 and listed in the National Register in 1990 (Jenkins et al. 1989).

**Significance**

The Washington Aqueduct is nationally significant as a representation of a highly important period of development in American waterworks and of the U.S. Army Corps of Engineers, entry into the field of public works (Criterion 1). The Washington Aqueduct also is significant for its design by the important nineteenth century architect - engineer Montgomery C. Meigs (Criterion 4).

The Washington Aqueduct's exceptional integrity and active operation provide a rare example of a nineteenth century municipal water supply system. Although the Washington Aqueduct has been expanded to meet the demands of Washington's increasing population, the original system remains largely intact and operational. Other early nineteenth century systems, such as New York's Croton Aqueduct and Boston's Cochituate Aqueduct, are not fully intact and are no longer in service. The Washington Aqueduct illustrates not only the technology of early gravity-fed water systems, but also the affect of waterworks on the physical development of cities. The financial commitment, as well as the meticulous planning and engineering necessary to

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provide an ample supply of water to the District of Columbia, represent an important development in nineteenth century urban planning and development: substantial public works projects. By the turn-of-the-century, the provision of water had become an essential element of every American city.

The Washington Aqueduct also is nationally significant as a large and important public works effort undertaken by the U.S. Army Corps of Engineers. During the early nineteenth century, the Corps of Engineers was the only Federal organization with trained engineers. For this reason, between 1824, when the Rivers and Harbors Act was passed, and the Civil War, the Corps became increasingly involved in civil works projects. The Washington Aqueduct exemplifies the military influence on the civil sector of antebellum America, a pattern that continued as the necessity of civil engineering became recognized more widely after the Civil War.

On a regional level, the Washington Aqueduct is significant for its contributions to the physical development of the District of Columbia. The patterns of residential development throughout the city were influenced by the Aqueduct. In addition to water, the Aqueduct provided access to previously inaccessible areas through the construction of bridges and roads. For instance, Conduit Road, the maintenance road for the conduit, quickly became a well-traveled route into the city. Towards the end of the nineteenth century, residential development gradually increased along Conduit Road. The area includes the D.C. neighborhood of Potomac Palisades, and the Maryland suburbs of Glen Echo, Idlewood, Brookmont, and Cabin John. Bridges, such as the Cabin John Bridge (Bridge 4), allowed traffic to cross otherwise impassable valleys.

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Similarly, the construction of Rock Creek Bridge (Bridge 6), originally developed to carry water mains over Rock Creek into the city, instituted an important traffic route between Georgetown and downtown Washington.

The Washington Aqueduct system also is significant for its important design by the architect-engineer Montgomery C. Meigs (Criterion 4); the Washington Aqueduct was one of Meigs' earliest large-scale public works projects. Meigs was born in Georgia in 1816 and raised in Philadelphia. In 1832, he entered the U.S. Military Academy, the only engineering school in the country at the time. Meigs graduated from the Academy fifth in his class in 1836. Meigs' involvement with the Corps of Engineers began in 1837. Among his first projects were improvements to the Mississippi River navigation and the Port of St. Louis. In 1851, Meigs was appointed assistant to Chief of Engineers, General Totten. Totten recommended that Meigs undertake the water supply study authorized by Congress in 1852 (Ways 1993:6).

Meigs was a highly influential architect and engineer, particularly in the Washington area. In addition to the Washington Aqueduct, he was involved in several major projects in Washington, including the expansion of the U.S. Capitol between 1853 and 1859 (while supervising the Aqueduct), and the design and construction of the Pension Building (now the National Building Museum) in 1881. Meigs died on January 2, 1892 and is buried in Arlington National Cemetery (Ways 1993:120).

The Washington Aqueduct is not only important for its engineering significance, but also for its architectural significance. The above-ground resources designed by Meigs illustrate the

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importance of architectural design in nineteenth century engineering projects. As Professor H.E. Babbitt explained in a 1962 textbook of waterworks, the physical appeal of waterworks historically has been an important factor in design. Babbitt notes that in order to gain public confidence, the buildings relating to a water system should be:

...of pleasing design and should be surrounded by attractive grounds. The public not acquainted with the technicalities of water [supply and] treatment, is likely to judge the quality of the water as much from the appearance of the plant, both inside and out, as from the appearance and taste of the water (Babbitt 1962:469).

Meigs' buildings and bridges were meticulously designed and constructed. The above-ground resources constructed as part of the original system illustrate period architectural styles. The resources built between 1853 and 1880 typically were designed in the Classical Revival style, as illustrated by the Influent Gatehouse (GR1) at the Georgetown Reservoir and the Sluice Tower (WA51) at the Dalecarlia Reservoir. Structures built during the 1870s represent other period styles. The brick air vents along MacArthur Boulevard were designed in the Italianate style, while the caretaker dwellings at Great Falls and Dalecarlia were designed in the Second Empire style. The bridges and culverts also demonstrate the level of design attention given to the utilitarian structures of the Aqueduct. For example, the Cabin John Bridge (Bridge 4), designed as a single span bridge with a span of 220-feet, was the longest single span masonry bridge in the world for nearly 40 years. The bridge was listed in the National Register of Historic Places in 1973. The

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Washington Aqueduct NHL District  
Montgomery County,  
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longevity of the system, both in terms of its design as well as its operation, attests to Meigs' skill  
and careful attention to detail in the planning of the Washington Aqueduct.

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Photograph #

- |         |   |
|---------|---|
| 1 of 14 | <ol style="list-style-type: none"><li>1. Gatehouse at Great Falls (GF2)</li><li>2. Montgomery County, Maryland</li><li>3. R. Christopher Goodwin &amp; Assoc., Inc.</li><li>4. January 1995</li><li>6. View facing east</li></ol>         |
| 2 of 14 | <ol style="list-style-type: none"><li>1. Culvert 12 (WA21)</li><li>2. Montgomery County, Maryland</li><li>3. R. Christopher Goodwin &amp; Assoc., Inc.</li><li>4. January 1995</li><li>6. View facing south</li></ol>                     |
| 3 of 14 | <ol style="list-style-type: none"><li>1. Typical 1920s Culvert Extension</li><li>2. Montgomery County, Maryland</li><li>3. R. Christopher Goodwin &amp; Assoc., Inc.</li><li>4. January 1995</li><li>6. View facing north</li></ol>       |
| 4 of 14 | <ol style="list-style-type: none"><li>1. Bridge 3/Griffith Park Bridge (WA24)</li><li>2. Montgomery County, Maryland</li><li>3. R. Christopher Goodwin &amp; Assoc., Inc.</li><li>4. January 1995</li><li>6. View facing north</li></ol>  |
| 5 of 14 | <ol style="list-style-type: none"><li>1. Bridge 4/Cabin John Bridge (WA30)</li><li>2. Montgomery County, Maryland</li><li>3. R. Christopher Goodwin &amp; Assoc., Inc.</li><li>4. January 1995</li><li>6. View facing northwest</li></ol> |

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| 6 of 14  | <ol style="list-style-type: none"><li>1. Historic view of Bridge 6 (WA83)</li><li>2. Washington, D.C.</li><li>3. N/A</li><li>4. ca. 1865</li><li>6. View facing west</li></ol>   |
| 7 of 14  | <ol style="list-style-type: none"><li>1. Bridge 6 (WA83)</li><li>2. Washington, D.C.</li><li>3. R. Christopher Goodwin &amp; Assoc., Inc.</li><li>4. January 1995</li><li>6. View facing northwest</li></ol>   |
| 8 of 14  | <ol style="list-style-type: none"><li>1. Exposed pipes on the underside of Bridge 6 (WA83)</li><li>2. Washington, D.C.</li><li>3. R. Christopher Goodwin &amp; Assoc., Inc.</li><li>4. January 1995</li><li>6. View of underside of bridge</li></ol> |
| 9 of 14  | <ol style="list-style-type: none"><li>1. Brick air vent</li><li>2. Montgomery County, Maryland</li><li>3. R. Christopher Goodwin &amp; Assoc., Inc.</li><li>4. January 1995</li><li>6. View west</li></ol>   |
| 10 of 14 | <ol style="list-style-type: none"><li>1. Caretaker Dwelling (DS37) at Dalecarlia</li><li>2. Washington, D.C.</li><li>3. Ken Baumgardt, U.S. Army Corps of Engineers, Baltimore District</li><li>4. January 1995</li><li>6. View southwest</li></ol>  |
| 11 of 14 | <ol style="list-style-type: none"><li>1. Sluice Tower (WA51) at the Dalecarlia Reservoir</li><li>2. Washington, D.C.</li><li>3. R. Christopher Goodwin &amp; Assoc., Inc.</li><li>4. January 1995</li><li>6. View north</li></ol>                    |

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| 12 of 14 | <ol style="list-style-type: none"><li>1. Influent gatehouse (GR1) at Georgetown Reservoir</li><li>2. Washington, D.C.</li><li>3. R. Christopher Goodwin &amp; Assoc., Inc.</li><li>4. January 1995</li><li>6. View west</li></ol>                                   |
| 13 of 14 | <ol style="list-style-type: none"><li>1. Meigs stairs located in Pipe Vault stairwell (GR7) at the Georgetown Reservoir</li><li>2. Washington, D.C.</li><li>3. R. Christopher Goodwin &amp; Assoc., Inc.</li><li>4. January 1995</li><li>6. Interior view</li></ol> |
| 14 of 14 | <ol style="list-style-type: none"><li>1. Quartermaster General Montgomery C. Meigs</li><li>2. Washington, D.C.</li><li>3. R. Christopher Goodwin &amp; Assoc., Inc.</li><li>4. ca. 1865</li><li>6. N/A</li></ol>  |

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**Additional Documentation**

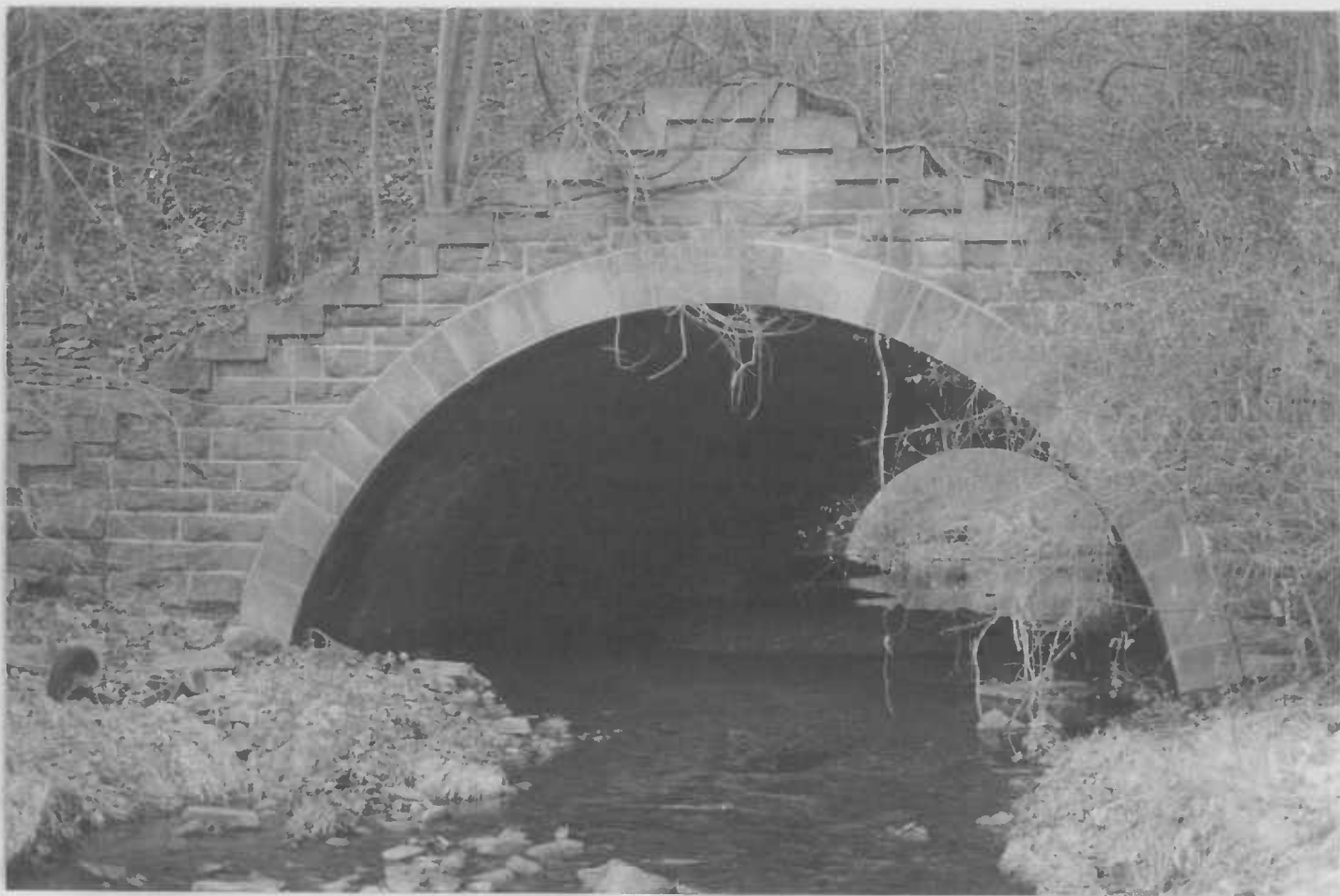
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|-----------|--|
| Figure 1  | Plan of Washington Aqueduct, signed by President Franklin Pierce, 1853.  |
| Figure 2  | Schematic Map of the Washington Aqueduct as it currently exists.   |
| Figure 3a | Map of Washington Aqueduct NHL District.   |
| Figure 3b | Map of Washington Aqueduct NHL District (Cont'd).  |
| Figure 3c | Map of Washington Aqueduct NHL District (Cont'd).  |
| Figure 4  | Map of Great Falls.  |
| Figure 5  | Design for Castle Gatehouse, 1901.   |
| Figure 6  | Profile of the conduit.  |
| Figure 7  | Drawing of a culvert by M.C. Meigs.  |
| Figure 8  | Map of the Dalecarlia Reservoir; only the property to the east of MacArthur Boulevard is included in the National Historic Landmark property boundaries. |
| Figure 9  | Map of the Georgetown Reservoir.   |
| Figure 10 | 1864 Plan of the Distributing Reservoir (Source: 1864 Annual Report of the Chief Engineer).  |



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PHOTO ★ GUARD # 3224  
**LIGHT IMPRESSIONS**  
Rochester, NY





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LIGHT IMPRESSIONS  
Rochester, NY





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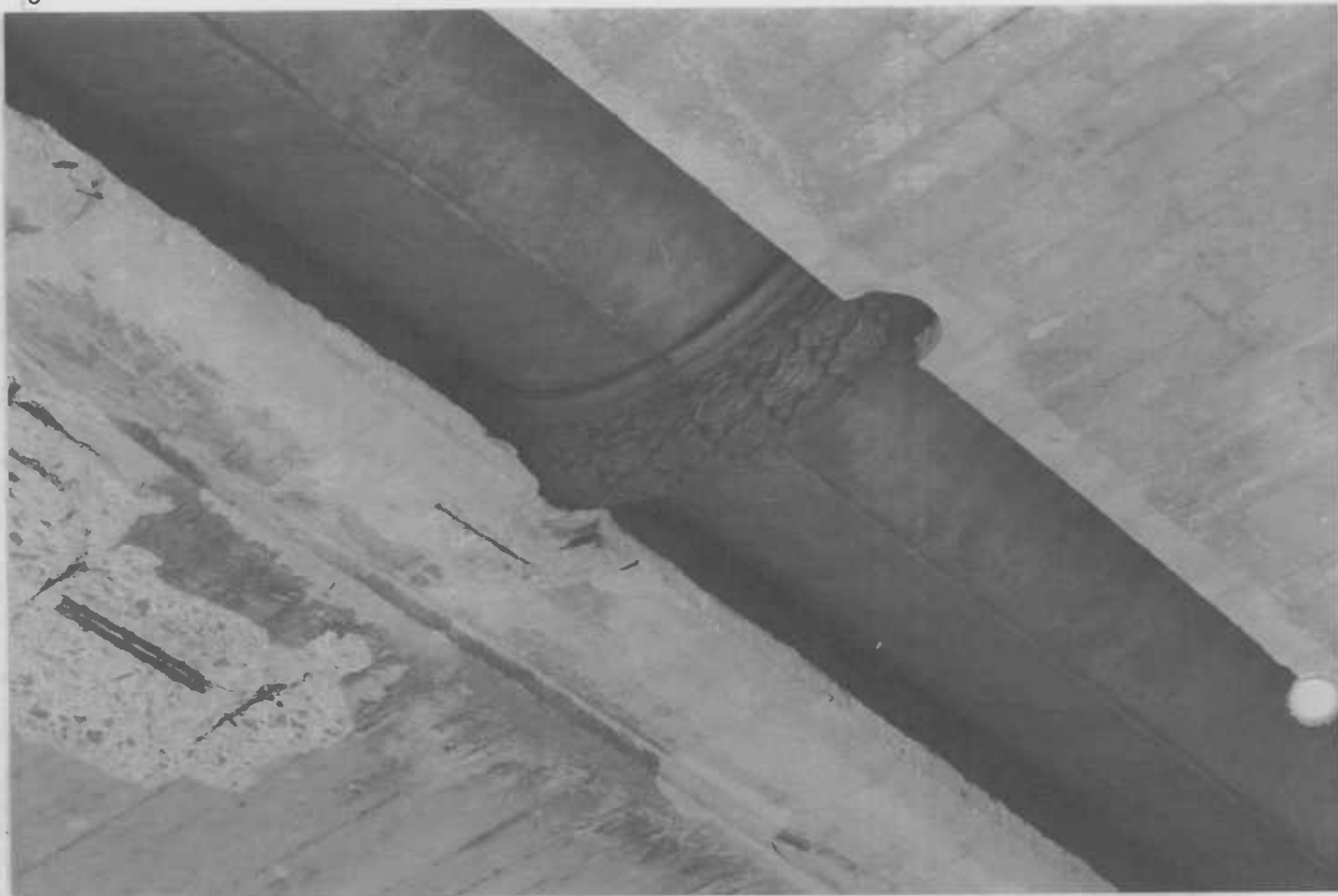




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PHOTO ★ GUARD # 3224  
LIGHT IMPRESSIONS  
Rochester, NY



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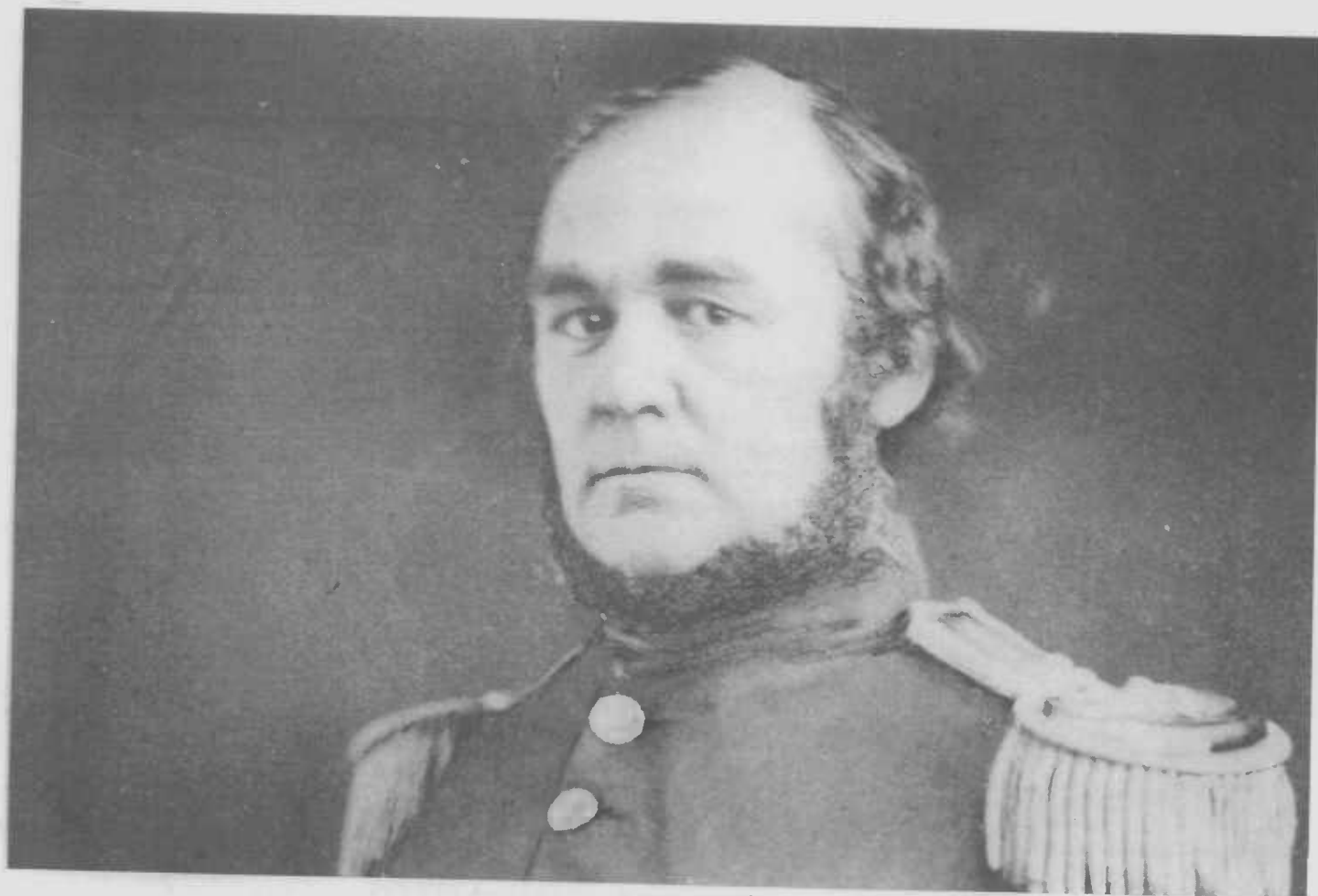




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**National Historic Landmark**  
**NATIONAL REGISTER OF HISTORIC PLACES**  
**INVENTORY - NOMINATION FORM**

M: 29-49

STATE: <u>Maryland</u>	
District of Columbia	
COUNTY:	
FOR NPS USE ONLY	
ENTRY NUMBER	DATE
	<u>designated 7 Nov. 1973</u>

(Type all entries - complete applicable sections)

<b>1. NAME</b>	
COMMON	<u>Washington Aqueduct</u>
AND/OR HISTORIC:	<u>Washington Aqueduct</u>

<b>2. LOCATION</b>			
STREET AND NUMBER:			
<u>5900 MacArthur Boulevard, N.W.</u>			
CITY OR TOWN:			
<u>Washington</u>			
STATE	CODE	COUNTY:	CODE
<u>Maryland</u>		<u>Montgomery</u>	
District of Columbia			

<b>3. CLASSIFICATION</b>			
CATEGORY (Check One)	OWNERSHIP	STATUS	ACCESSIBLE TO THE PUBLIC
<input type="checkbox"/> District <input type="checkbox"/> Site <input type="checkbox"/> Object	<input checked="" type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Both	<input checked="" type="checkbox"/> Occupied <input type="checkbox"/> Unoccupied <input type="checkbox"/> Preservation work in progress	Yes: <input checked="" type="checkbox"/> Restricted <input type="checkbox"/> Unrestricted <input type="checkbox"/> No
PRESENT USE (Check One or More as Appropriate)			
<input type="checkbox"/> Agricultural <input type="checkbox"/> Commercial <input type="checkbox"/> Educational <input type="checkbox"/> Entertainment	<input type="checkbox"/> Government <input type="checkbox"/> Industrial <input checked="" type="checkbox"/> Military <input type="checkbox"/> Museum	<input type="checkbox"/> Park <input type="checkbox"/> Private Residence <input type="checkbox"/> Religious <input type="checkbox"/> Scientific	<input type="checkbox"/> Transportation <input checked="" type="checkbox"/> Other (Specify) <u>Water system for</u> <u>general population</u>

<b>4. OWNER OF PROPERTY</b>	
OWNER'S NAME:	
<u>U.S. Army Corps of Engineers</u>	
STREET AND NUMBER:	
<u>5900 MacArthur Boulevard</u>	
CITY OR TOWN:	STATE:
<u>Washington</u>	<u>District of Columbia</u>

<b>5. LOCATION OF LEGAL DESCRIPTION</b>	
COURTHOUSE, REGISTRY OF DEEDS, ETC:	
<u>Montgomery County Courthouse and District of Columbia Courthouse</u>	
STREET AND NUMBER:	
CITY OR TOWN:	
<u>District of Columbia</u>	STATE:
<u>Rockville</u>	<u>Maryland</u>

<b>6. REPRESENTATION IN EXISTING SURVEYS</b>	
TITLE OF SURVEY:	
<u>Historic American Engineering Record</u>	
DATE OF SURVEY:	<input checked="" type="checkbox"/> Federal <input type="checkbox"/> State <input type="checkbox"/> County <input type="checkbox"/> Local
<u>1972-1973</u>	
DEPOSITORY FOR SURVEY RECORDS:	
<u>National Park Service</u>	
STREET AND NUMBER:	
<u>1100 L Street, N.W.</u>	
CITY OR TOWN:	STATE:
<u>Washington,</u>	<u>District of Columbia</u>

SEE INSTRUCTIONS

STATE:

COUNTY:

ENTRY NUMBER

DATE

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7 DESCRIPTION	
CONDITION	(Check One)
	<input type="checkbox"/> Excellent <input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Deteriorated <input type="checkbox"/> Ruins <input type="checkbox"/> Unexposed
	(Check One)
	<input checked="" type="checkbox"/> Altered <input type="checkbox"/> Unaltered <input type="checkbox"/> Moved <input checked="" type="checkbox"/> Original Site

DESCRIBE THE PRESENT AND ORIGINAL (If known) PHYSICAL APPEARANCE

The Washington Aqueduct, built principally between the years 1853-1863 to supply the water needs of the District's citizens, is still intact today, still the main source of water, and is in overall good condition.

Montgomery Meigs, chief engineer for the Aqueduct during most of its construction, borrowed ideas from other aqueducts in the country but considered the Washington system to be designed more nearly upon that of the Cochituate Aqueduct in Boston.

Beginning at Great Falls, Maryland near Lock 20 on the C&O canal, the Aqueduct stretches for 12 miles downriver to the Georgetown Reservoir. Since the 19th century the Aqueduct has been lengthened and expanded to provide for the increased needs of a growing population. Though the Aqueduct has changed somewhat in outward appearance it still includes the following features: a dam across the Potomac at Great Falls to divert water to the Maryland side, intake works on the shore including the original sandstone control gate house, tunnels totaling 5,392 feet in length, six bridges, numerous brick air vents, pump stations and reservoirs at Dalecarlia and Georgetown, and of course the conduit itself.

The dam on the river was originally built only about halfway across but increased demand for water resulted in its completion to the Virginia side. Built of cut stone the dam was anchored to the river floor, not to block the flow but to divert it.

The intake works are covered by a modern concrete observation deck keeping them from view.

The original sandstone control gatehouse is still in use and looks much the same as it did a century ago. Inside is a system of 20 small cast iron slide gates 2' wide by 4' high in two sets of 10 each, operated by iron stems 30' long with threaded hand wrenches.

A cut and cover header lies beneath the C&O canal bed.

The conduit itself was the largest item of construction. Almost 12 miles in length, the circular tube is 9' in diameter and is built of brick, stone, and mortar. The work on the conduit was done so well that the Corps of Engineers considers the old conduit in better condition than a parallel one built of concrete in the 1920's. A road was constructed parallel to the conduit to facilitate repairs and inspections. This road today is known as MacArthur Boulevard, named for the famous general. Its path lies above much of the original conduit, which first enters beneath the roadway near Anglers Inn in Montgomery County. However the conduit doesn't follow the exact route of the roadbed into the District since in various locations it was found advantageous to blast tunnels through the hillsides rather

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INVENTORY - NOMINATION FORM

(Continuation Sheet)

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(Number all entries)

7. Description: (1) Washington Aqueduct

than make deep-rock cuts during the original construction. The most obvious example of this "deviance" is found at Bridge No. 3 where the bridge is not joined by any roadbed but instead lies at the foot of a hill through which a tunnel had been sent. According to Corps engineers the conduit is still in very good condition. Heavy loads on the roadbed above have caused it to "go a little out of round," however this has caused no problems.

Of the original six bridges only three (No. 3, Cabin John, and Rock Creek) remain in view today. Bridges No. 1 and 2 due to earth fills are nothing more than culverts while Bridge No. 5, which used to cross College Pond, has been covered along with the pond, also by earth fills. Only Bridge No. 3 and Cabin John Bridge retain their original appearance. Both constructed of sandstone and granite, Bridge No. 3's arch supports a span of 75-feet while that at Cabin John's supports one at 220-feet. From 1863 to 1903 the latter arch held the world's record for the longest single masonry arch span. Around the bases of both spans today thick underbrush makes access difficult. Rock Creek Bridge, with its two 48-inch diameter arched cast iron pipes not only carrying water for a city but also supporting a span for vehicular traffic, had its superstructure completely removed when a larger concrete bridge was built over it in 1916 to accommodate increased traffic loads.

Along the path of the conduit can be seen three brick air vent structures weathered, but in good condition.

Today both Dalecarlia and Georgetown reservoirs have little of their outward appearance of the time when first constructed.

A gate house, with battlement parapet, at Georgetown Reservoir, about 70 years old, is remarkable in that it closely resembles the castle emblem of the U.S. Army Corps of Engineers.

The Aqueduct spills into the Dalecarlia Reservoir just as it reaches the District line. Constructed originally by placing an earth dike across the valley of Little Falls Brook the reservoir had a total holding capacity of about 150,000,000 gallons. It was hoped that allowing the murky river water to remain in this reservoir and the Georgetown reservoir two miles away that the material carried in suspension would settle to the bottom before distribution to the city. However such was not completely the case and the water was destined to have a muddy yellowish color until filtration was adopted in 1928 by the addition of a rapid-sand filter plant. Since this time other facilities have been added to Dalecarlia to make it a modern filtration plant.

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7. Description: (2) Washington Aqueduct

The Georgetown Reservoir which unlike Dalecarlia, had to be excavated and then surrounded by an earth dike, was later paved with rip rap to further sedimentation and preserve the walls. Originally designed as the last point before distribution, its use now is as a sedimentation basin. From here partially-treated water flows to McMillan Reservoir, completed in NE Washington in 1905, where it is filtered and then sent on for public use.

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SIGNIFICANCE			
PERIOD (Check One or More as Appropriate)			
<input type="checkbox"/> Pre-Columbian	<input type="checkbox"/> 16th Century	<input type="checkbox"/> 18th Century	<input type="checkbox"/> 20th Century
<input type="checkbox"/> 15th Century	<input type="checkbox"/> 17th Century	<input checked="" type="checkbox"/> 19th Century	
SPECIFIC DATE(S) (If Applicable and Known)			
AREAS OF SIGNIFICANCE (Check One or More as Appropriate)			
<input type="checkbox"/> Aboriginal	<input type="checkbox"/> Education	<input type="checkbox"/> Political	<input type="checkbox"/> Urban Planning
<input type="checkbox"/> Prehistoric	<input type="checkbox"/> Engineering	<input type="checkbox"/> Religion/Philosophy	<input type="checkbox"/> Other (Specify)
<input type="checkbox"/> Historic	<input type="checkbox"/> Industry	<input type="checkbox"/> Science	
<input type="checkbox"/> Agriculture	<input type="checkbox"/> Invention	<input type="checkbox"/> Sculpture	
<input type="checkbox"/> Architecture	<input type="checkbox"/> Landscape	<input type="checkbox"/> Social/Humanitarian	
<input type="checkbox"/> Art	<input type="checkbox"/> Architecture	<input type="checkbox"/> Theater	
<input type="checkbox"/> Commerce	<input type="checkbox"/> Literature	<input checked="" type="checkbox"/> Transportation	
<input type="checkbox"/> Communications	<input checked="" type="checkbox"/> Military		
<input type="checkbox"/> Conservation	<input type="checkbox"/> Music		
STATEMENT OF SIGNIFICANCE			
<p>The Washington Aqueduct, the District of Columbia's first water system, epitomizes the entry of the Army Corps of Engineers into the field of public works and consequently into direct involvement in major economic influences. From 1824 with the passage of the Rivers and Harbors Act until the Civil War, the Army Corps developed a special relationship with Congress based on its profound involvement in civil works. The Washington Aqueduct is a superlative illustration of the military influence on the civil sector of ante-bellum America.</p> <p>The Aqueduct is a monument of engineering to its designer and developer, Montgomery Cunningham Meigs, future quartermaster general of the Army. From 1836 until the Civil War, Meigs was involved in engineering fortifications from Philadelphia to Fort Wayne, the Delaware Breakwater, and ultimately, the dome and the wings of the Capitol. In the Aqueduct, which he counted his favorite project, he left such engineering superlatives as a 12-mile underground masonry conduit utilized to this day; the old Cabin John Bridge, which remained the longest masonry arch in the world until 1903; and the Rock Creek Bridge whose arched cast iron conduit supported the structure!</p> <p style="text-align: center;"><u>History</u></p> <p>When L'Enfant drew up his original plan for the nation's Capital only Rock Creek was mentioned as a source of a future water supply for the city. The burning of the Capitol by British forces during the War of 1812, a later fire in the Capitol in December 1851 which destroyed many valuable manuscripts, and an ever-increasing population within the boundary of the District of Columbia eventually forced the Congress into the realization that Washington required more than the present wells and springs for its source of water. In 1852, Lt. Montgomery C. Meigs, United States Army Corps of Engineers, was authorized by Congress to submit a report concerning the water needs of the Capital. Meigs report not only covered the present and future needs of the city's population, but also comparisons of the water supplies of other cities, storage, and the equipment and operating costs required for an aqueduct's operation. Due to the depth and scope of his study it was accepted, and for the next decade work</p>			

(continued)

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8. Significance: (1) Washington Aqueduct

would be done which would provide Washington with its first public water system.

In 1853 Congress appropriated the funds necessary for surveys right of way acquisitions, and initial construction. Ground was broken at Great Falls, Maryland in November of the same year for construction of the conduit. Problems which were to either stop completely or delay construction were numerous: little or no Congressional funding; difficulty in obtaining right of way; sickness (especially from malaria); politics; the outbreak of the Civil War; shortage of labor due to the war; and fear of Confederate raids.

The plan of Montgomery Meigs was to divert the waters of the Potomac River, at a point 12 miles upriver from the city of Georgetown, into a brick or stone conduit and with the aid of pumping stations and the force of gravity bring the water to retaining reservoirs where after several days it could then be pumped into the pipelines of the city. Accomplishing this feat required construction of a masonry dam halfway across the river and a control gate house at Great Falls, eleven tunnels with an aggregate length of 5,392 feet, six bridges, pump stations, pipelines, and two reservoirs.

The conduit itself was the largest item to be constructed and runs approximately 12 miles. With an interior diameter of 9 feet it was envisioned by Meigs that it could supply the city's water needs for the next 200 years. However population increases and the use of such things as "fixed" bath tubs resulted in capacity being reached in less than a third of the predicted time.

Building materials included cast iron for the outlet pipes at Georgetown and the conduit over Rock Creek, natural cement, sharp flint sand, concrete, mortar, rubble stone, brick, and sandstone (quarried at Seneca 7 miles upriver from Great Falls). Supplies were paid for directly by the U.S. Government and were brought to the site by wagon or canal boat using the C&O Canal. Rubble from tunnel excavations provided fill for valleys and roadways. The sandstone from Seneca was used in culverts, gate houses, and bridges.

Besides the construction of the conduit which brought water to the city, the most notable achievement of Meigs and his engineers was the construction of 6 bridges to aid in the flow of the stream. Two in particular, Cabin John Bridge and Rock Creek Bridge, enjoyed much critical acclaim at the time. Cabin John, constructed of timber, granite, and sandstone, held the record for the longest masonry arch in the world (220') for 40 years until the Luxemburg Bridge in Europe eclipsed it by its completion in 1903. Rock Creek employed the use of

(continued)

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COUNTY	
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8. Significance: (2) Washington Aqueduct

arched cast iron pipes not only to transport water but also as a means of support for the bridge. Its arch of 200-feet is today still one of the longest unsupported metal pipe arches in the world.

The construction of the first reservoir (today known as Dalecarlia) was made by erecting an earthen dike across the valley of Little Falls brook near the District boundary line. The Georgetown reservoir, 2 miles down river, required excavation to 12-feet and construction of a large earthen rectangular dike for storage.

During the period of the Aqueduct's construction and for years afterward numerous personalities were to clash in its history. Captain Montgomery Meigs, the chief engineer for most of the period 1853-1863, met with disfavor from President Buchanan and in September 1860 was transferred by Secretary of War John Floyd to Dry Tortugas Island to superintend the construction of Fort Jefferson. Meigs was later returned as chief engineer in February 1861 upon Lincoln's accession to the presidency. Meigs considered the Aqueduct always as his favorite accomplishment and saw to it that numerous inscriptions were placed on various bridges, hydrants, and pumps heralding his deed and that of his assistants. The name of Jefferson Davis, Secretary of War in 1853 when the Aqueduct was begun, was stricken from a stone inscription on the west end of Cabin John Bridge in 1862 by orders of Secretary of the Interior Caleb Smith, who administered the Aqueduct for 5 years (1862-7). Later, in 1909, President Theodore Roosevelt ordered Davis's name reinstated. Living in retirement in D.C. until his death in 1892, Meigs often would submit reports condemning the proposed modifications of his successors at the Aqueduct and then submit his own plans directly to Congress. This caused quite a furor on several occasions.

Despite the many problems besetting the Nation, on December 5, 1863 the first water flowed into the conduit near Lock 20 on the C&O Canal. Two days later it was let into the reservoirs. After two weeks more the water was shut off in order to "point up the conduit." Reopened again in July 1864, the conduit was placed in service from that date. Drained in 1891 after 27 years of continuous use, the structure showed remarkable watertightness.

## 9. MAJOR BIBLIOGRAPHICAL REFERENCES

Hutton, William R. "The Washington Aqueduct 1853-1898," The Engineering Record, Vol. 40, No. 9, 1899.

History of the Washington Aqueduct, Washington District Corps of Engineers, 1953.

## 10. GEOGRAPHICAL DATA

\* see continuation sheet

LATITUDE AND LONGITUDE COORDINATES DEFINING A RECTANGLE LOCATING THE PROPERTY			O R	LATITUDE AND LONGITUDE COORDINATES DEFINING THE CENTER POINT OF A PROPERTY OF LESS THAN TEN ACRES		
CORNER	LATITUDE	LONGITUDE		LATITUDE	LONGITUDE	
	Degrees Minutes Seconds	Degrees Minutes Seconds		Degrees Minutes Seconds	Degrees Minutes Seconds	Degrees Minutes Seconds
NW	38° 00' 20"	77° 15' 13"		38° 54' 15"	77° 73' 23"	
NE	39° 00' 30"	77° 15' 13"				
SE	38° 58' 56"	77° 13' 35"				
SW	38° 58' 47"	77° 13' 50"				

APPROXIMATE ACREAGE OF NOMINATED PROPERTY: 163 acres

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE:	CODE	COUNTY	CODE
Maryland		Montgomery	
District of Columbia		District of Columbia	

## 11. FORM PREPARED BY

NAME AND TITLE:

Ben Levy, Senior Historian, and Paul Ghioto, Assistant

ORGANIZATION

Division of History, Office of Archeology and  
Historic Preservation, National Park Service

DATE

June 27, 1973

STREET AND NUMBER:

1100 L Street, N.W.

CITY OR TOWN:

Washington

STATE

D.C.

CODE

## 12. STATE LIAISON OFFICER CERTIFICATION

## NATIONAL REGISTER VERIFICATION

As the designated State Liaison Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service. The recommended level of significance of this nomination is:

National ☐ State ☐ Local ☐

Name \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_

I hereby certify that this property is included in the National Register.

\_\_\_\_\_  
Chief, Office of Archeology and Historic Preservation

Date \_\_\_\_\_

ATTEST:

\_\_\_\_\_  
Keeper of The National Register

Date \_\_\_\_\_

Rock  
Creek  
Bridge

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INVENTORY - NOMINATION FORM

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District of Columbia	
COUNTY	
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10. Geographical Data

Area 3

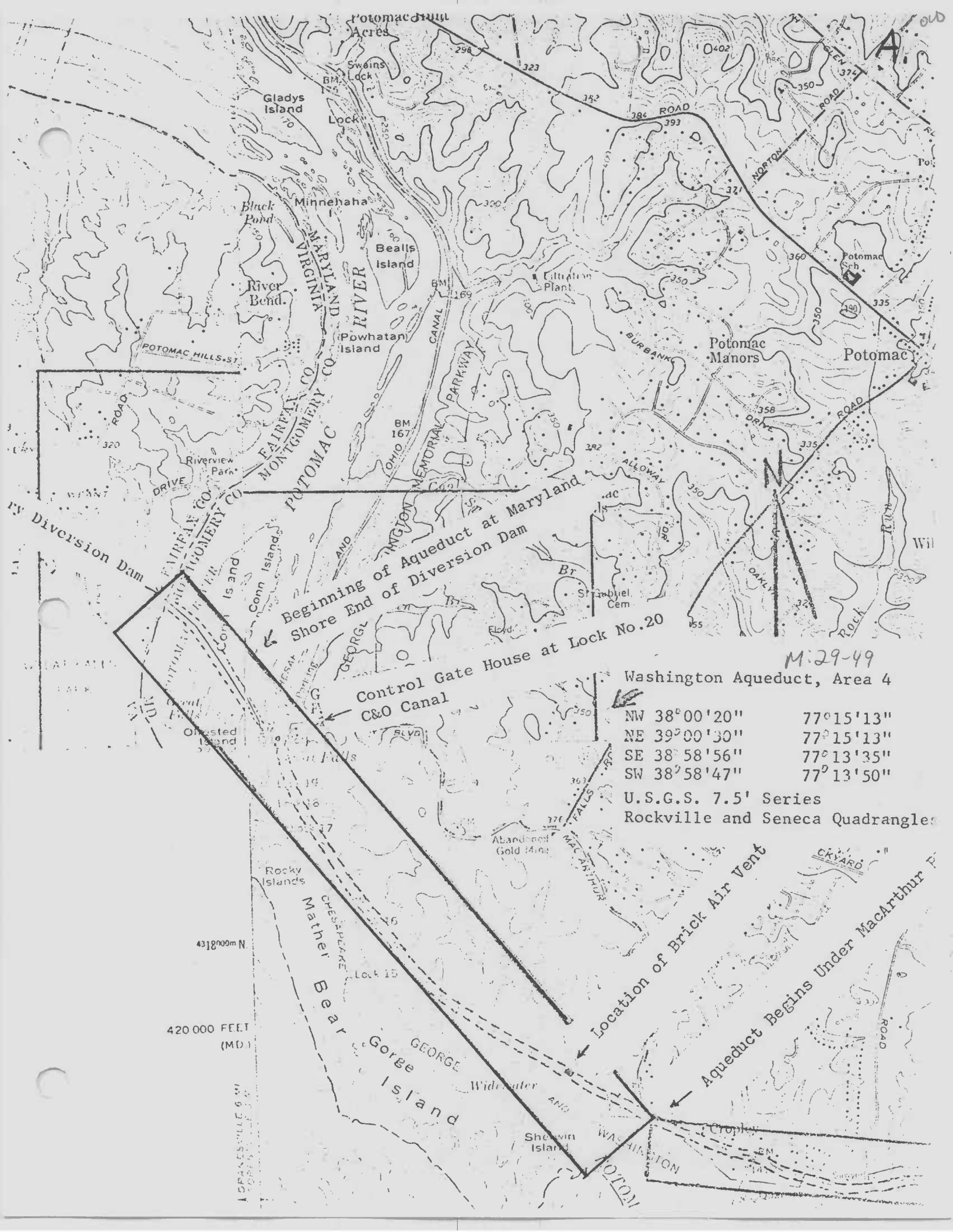
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NE	38° 58' 27"	77° 08' 45"
SE	38° 58' 17"	77° 08' 47"
SW	38° 58' 45"	77° 13' 37"

Area 2

NW	38° 58' 21"	77° 08' 47"
NE	38° 58' 38"	77° 08' 11"
SE	38° 56' 27"	77° 06' 14"
SW	38° 56' 08"	77° 06' 53"

Area 1

NW	38° 54' 26"	77° 05' 34"
NE	38° 56' 08"	77° 06' 47"
SE	38° 56' 16"	77° 06' 29"
SW	38° 54' 33"	77° 05' 17"



Beginning of Aqueduct at Maryland  
Shore End of Diversion Dam

Control Gate House at Lock No. 20  
C&O Canal

Washington Aqueduct, Area 4

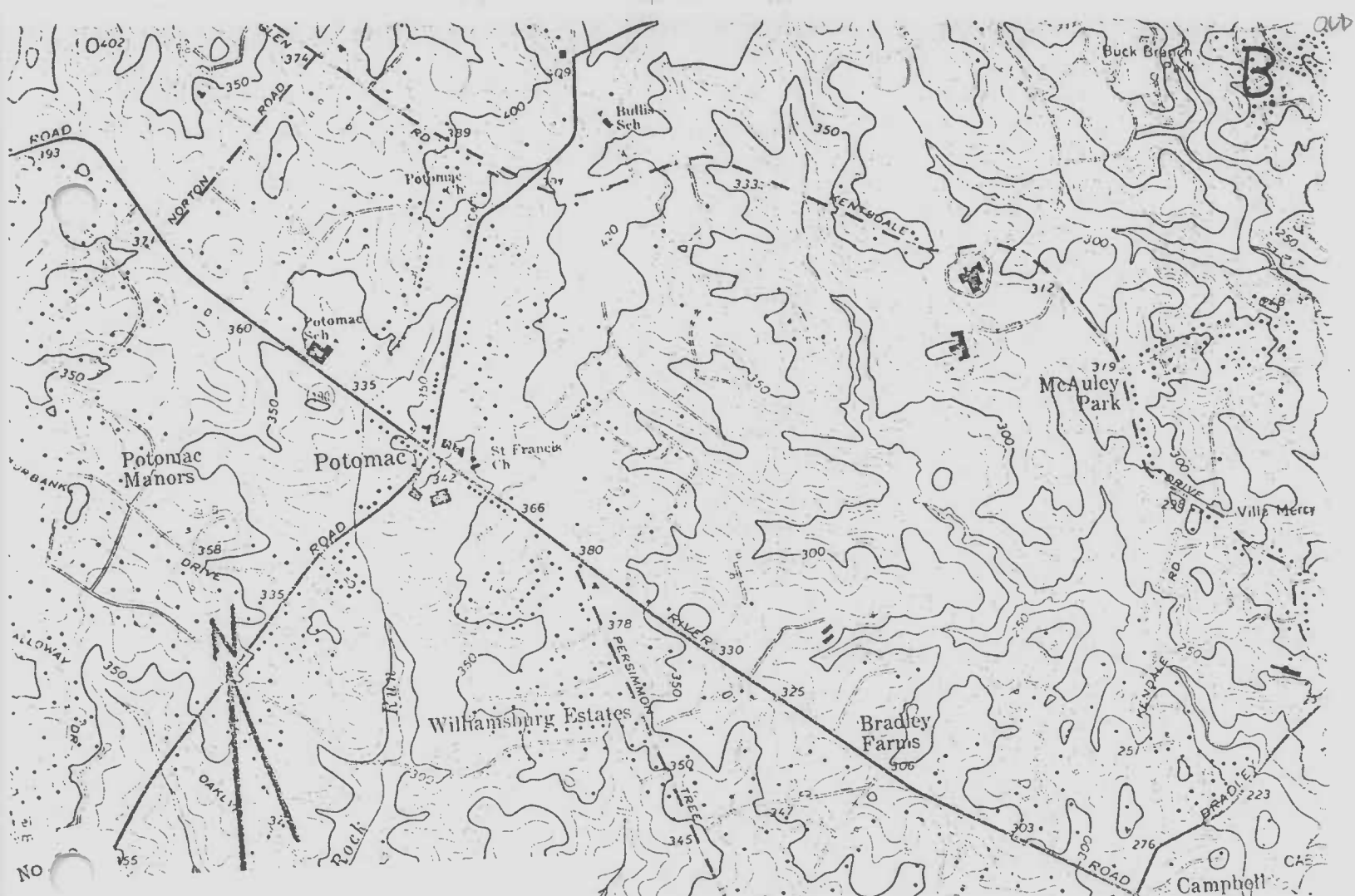
NW 38°00'20"	77°15'13"
NE 39°00'30"	77°15'13"
SE 38°58'56"	77°13'35"
SW 38°58'47"	77°13'50"

U.S.G.S. 7.5' Series  
Rockville and Seneca Quadrangles

Location of Brick Air Vent  
Aqueduct Begins Under MacArthur P.

420 000 FEET  
(MD)

431800m N.



### Washington Aqueduct, Area 4

NW 38°00'20"	77°15'13"
NE 39°00'30"	77°15'13"
SE 38°58'56"	77°13'35"
SW 38°58'47"	77°13'50"

U.S.G.S. 7.5' Series  
Rockville and Seneca Quadrangles

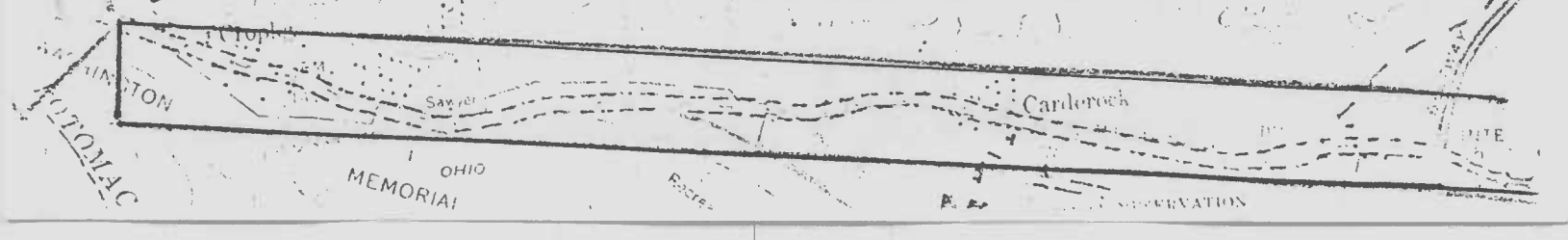
Location of Brick Air Vent  
Aqueduct Begins Under MacArthur Blvd.

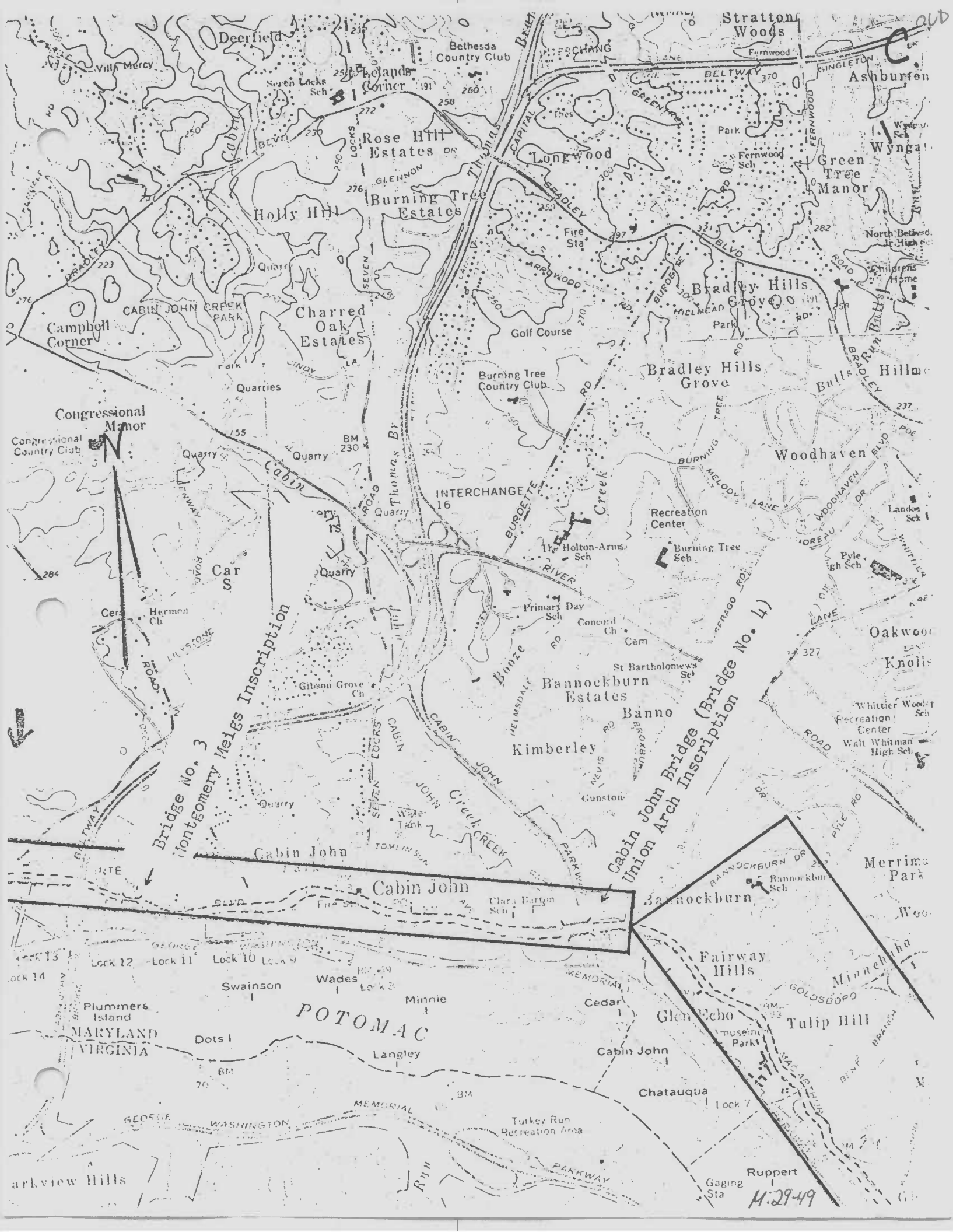
### Washington Aqueduct, Area 3

NW 38°58'56"	77°13'35"
NE 38°58'27"	77°08'45"
SE 38°58'17"	77°08'47"
SW 38°58'45"	77°13'37"

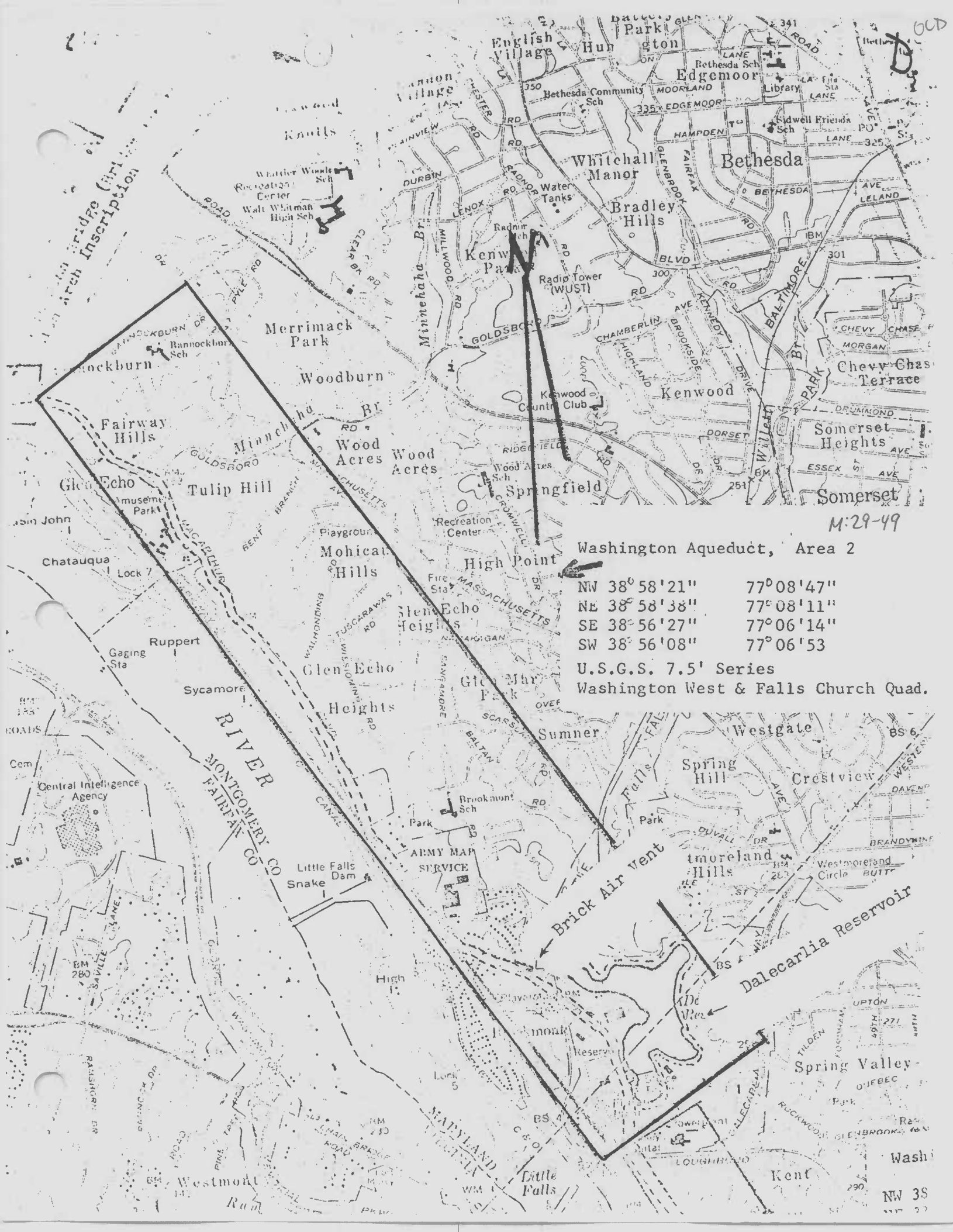
U.S.G.S. 7.5' Series  
Falls Church Quadrangle

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Deerfield  
Verna Mercy  
Seven Locks Sch  
Rose Hill Estates  
Burning Tree Estates  
Holly Hill  
Charred Oak Estates  
Cabin John Creek Park  
Congressional Manor  
Congressional Country Club  
Cabin John  
Bannockburn Estates  
Banno  
Kimberley  
Cabin John  
Fairway Hills  
Glen Echo  
Tulip Hill  
Chataqua  
Ruppert  
M. 29-49

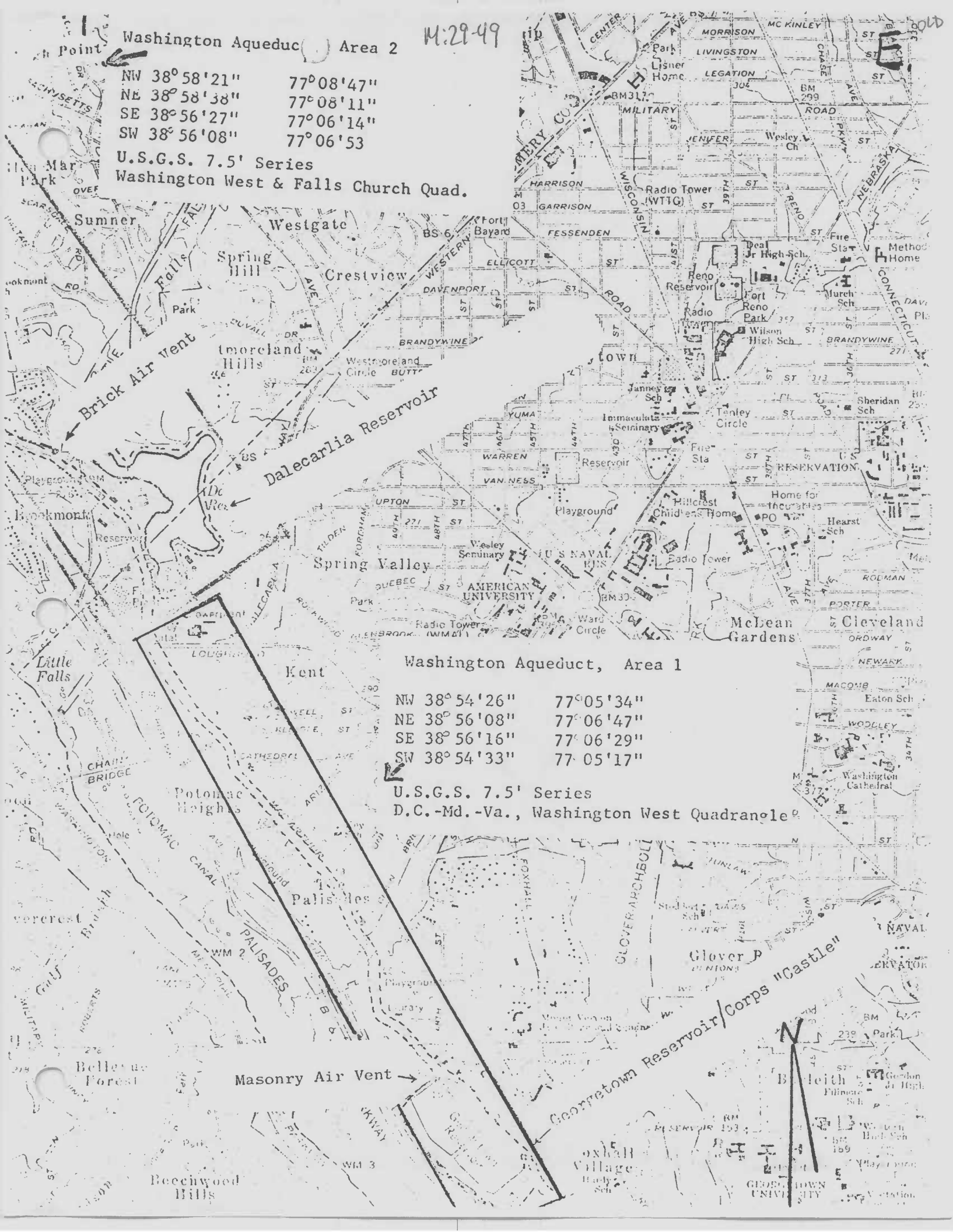


# Washington Aqueduc Area 2

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NW 38° 58' 21" 77° 08' 47"  
 NE 38° 58' 38" 77° 08' 11"  
 SE 38° 56' 27" 77° 06' 14"  
 SW 38° 56' 08" 77° 06' 53"

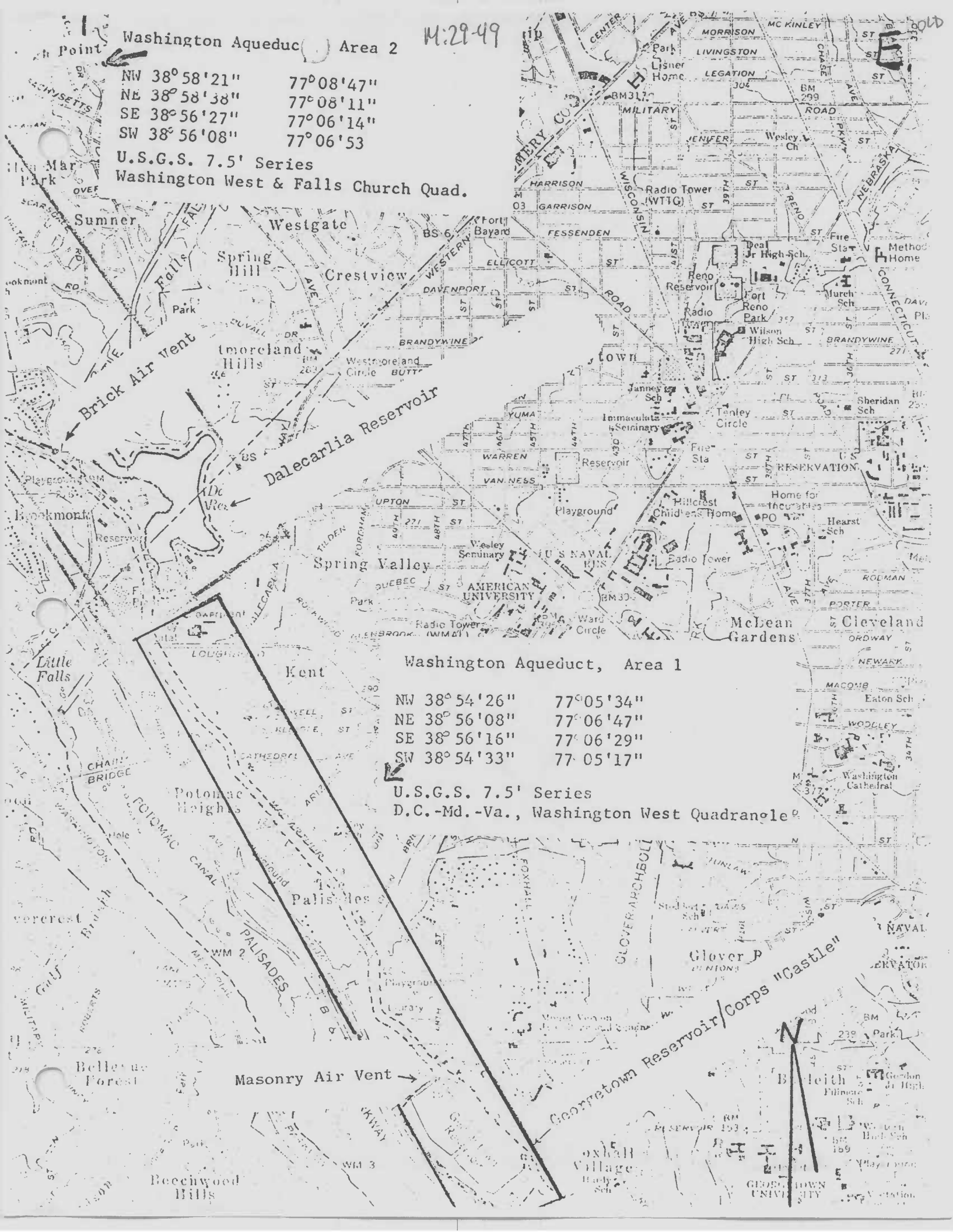
U.S.G.S. 7.5' Series  
 Washington West & Falls Church Quad.



## Washington Aqueduc, Area 1

NW 38° 54' 26" 77° 05' 34"  
 NE 38° 56' 08" 77° 06' 47"  
 SE 38° 56' 16" 77° 06' 29"  
 SW 38° 54' 33" 77° 05' 17"

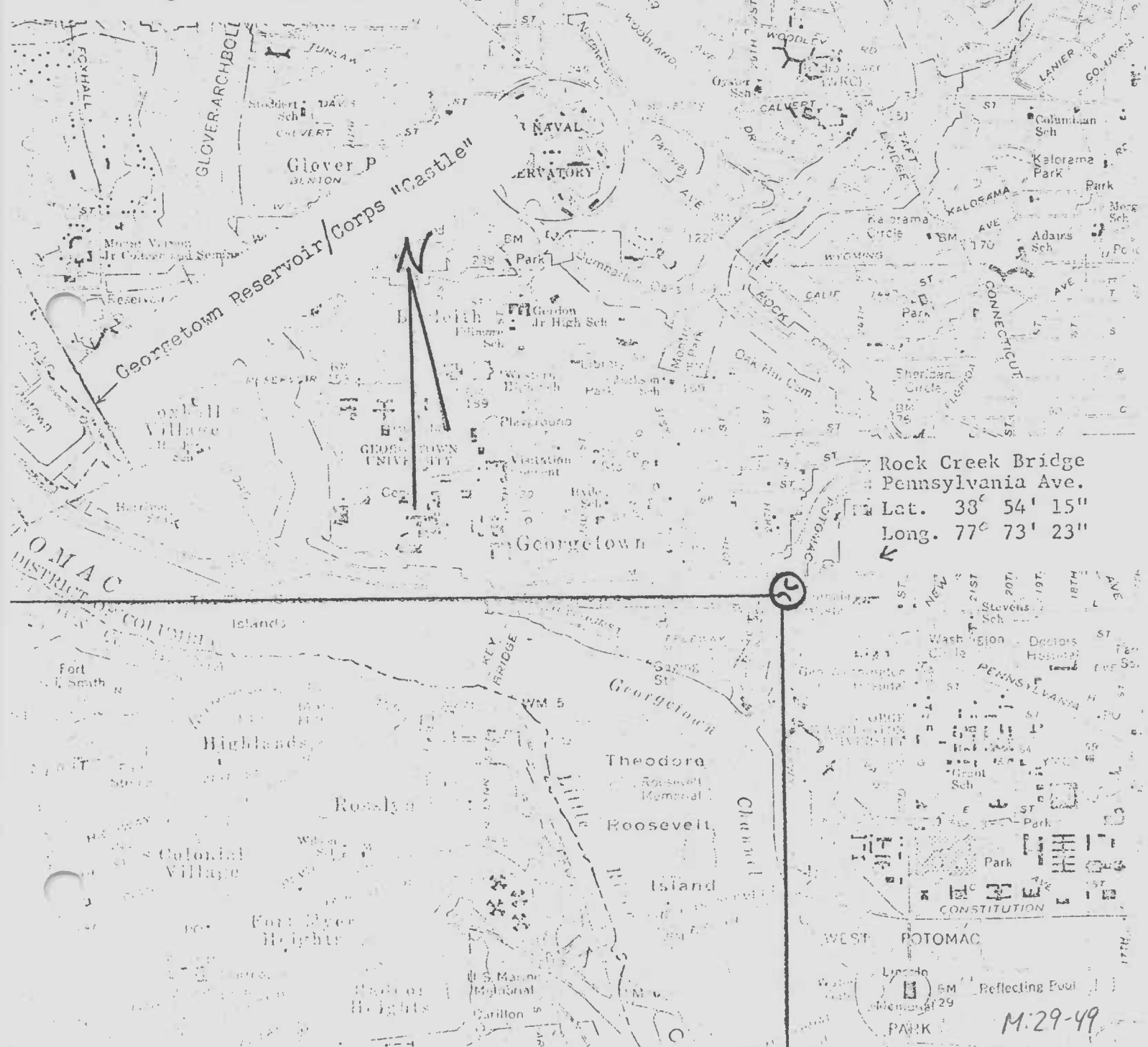
U.S.G.S. 7.5' Series  
 D.C.-Md.-Va., Washington West Quadrangle



gton Aqueduct, Area 1

4'26" 77°05'34"  
 6'08" 77°06'47"  
 6'16" 77°06'29"  
 4'33" 77°05'17"

. 7.5' Series  
 .-Va., Washington West Quadrangle



Rock Creek Bridge  
 Pennsylvania Ave.  
 Lat. 38° 54' 15"  
 Long. 77° 73' 23"

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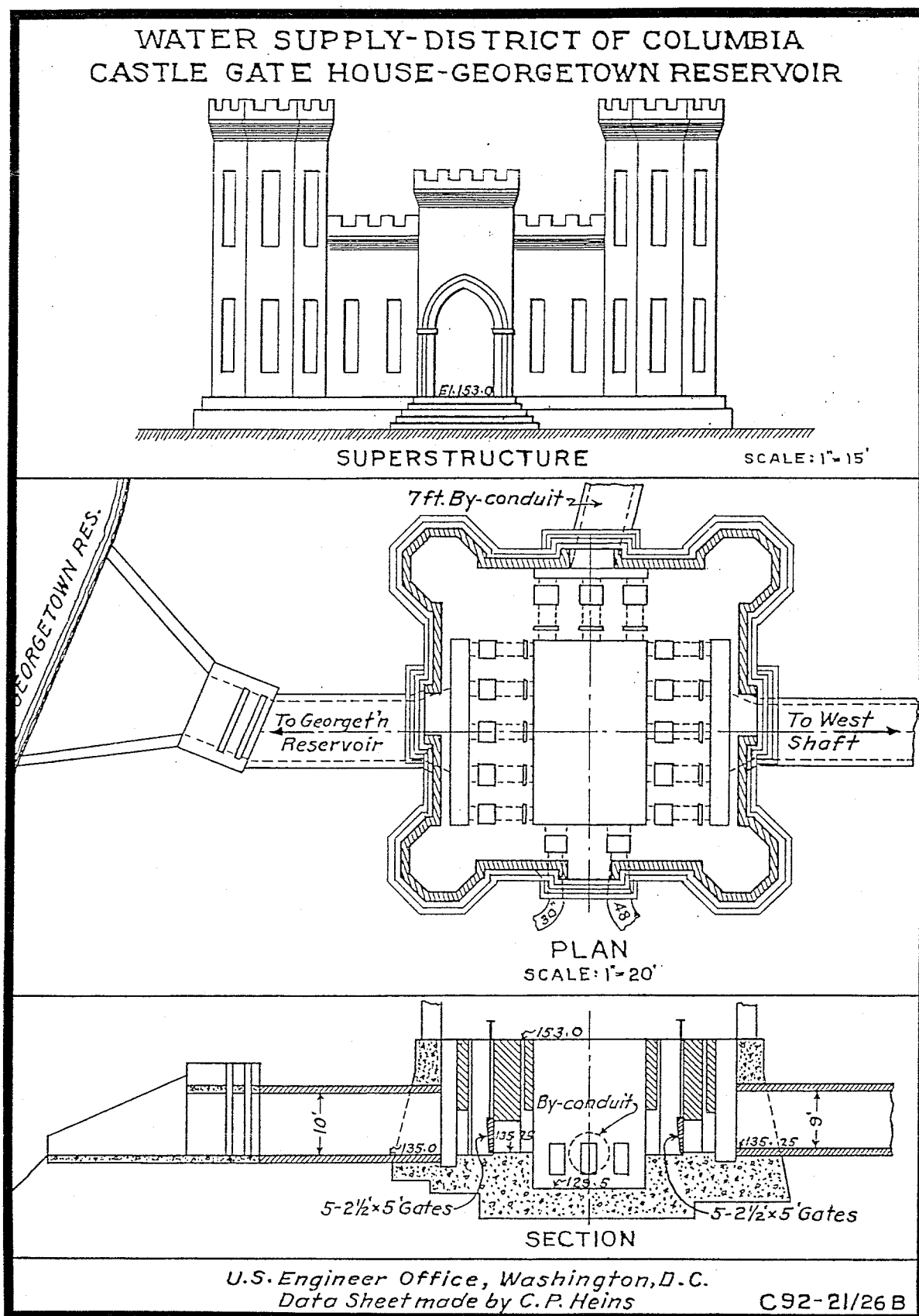


Figure 5 Design for Castle Gatehouse, 1901.

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64-62-W

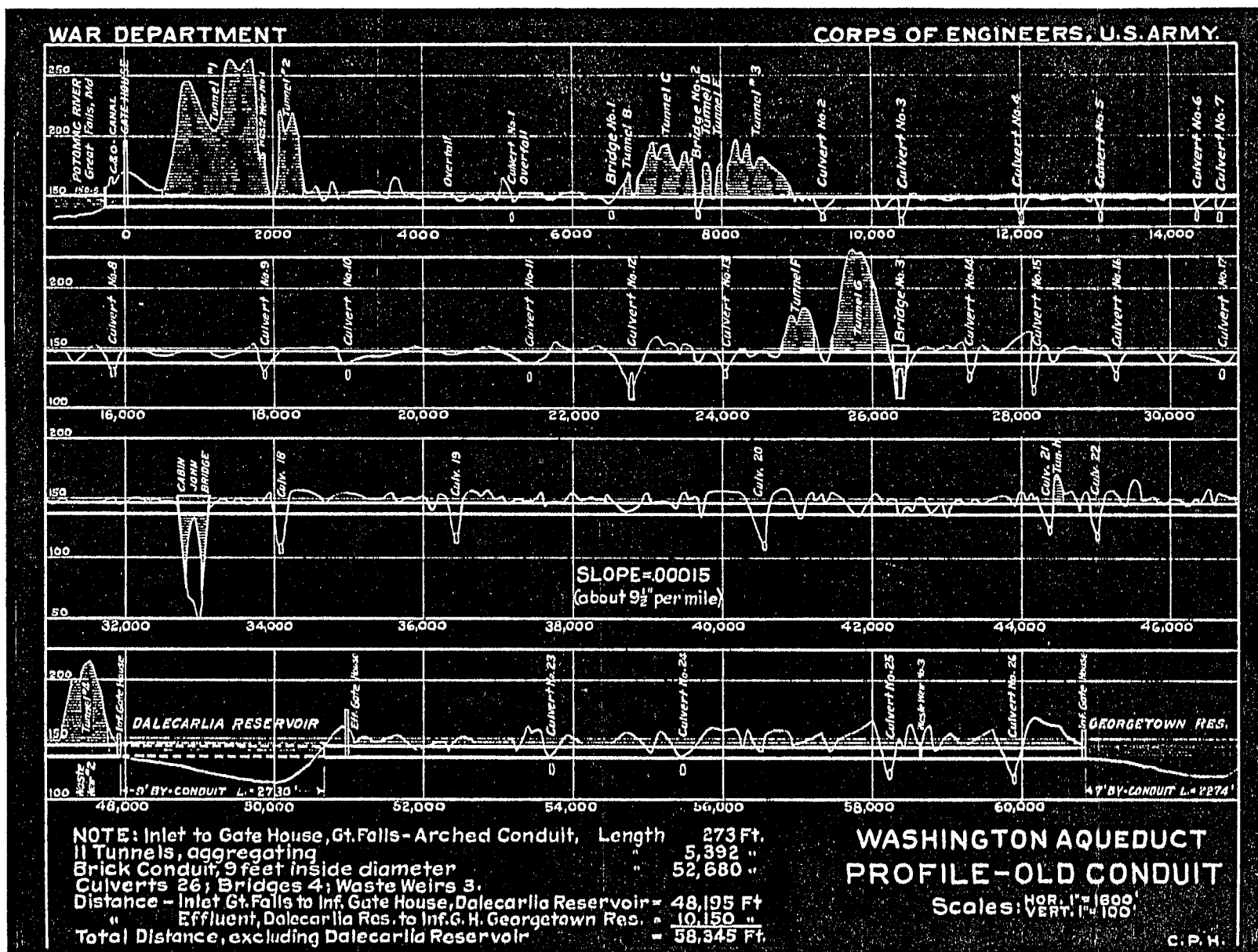


Figure 6 Profile of the conduit.

DRAFT

DRAFT

WASHINGTON AQUEDUCT  
CULVERT N<sup>o</sup> 6  
STATION 144+27.5

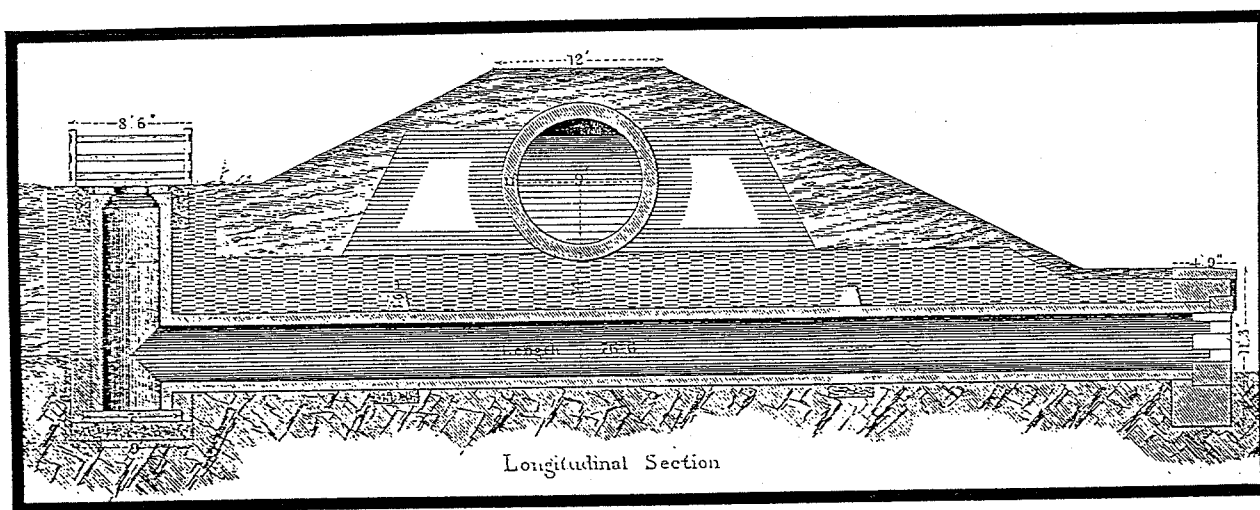
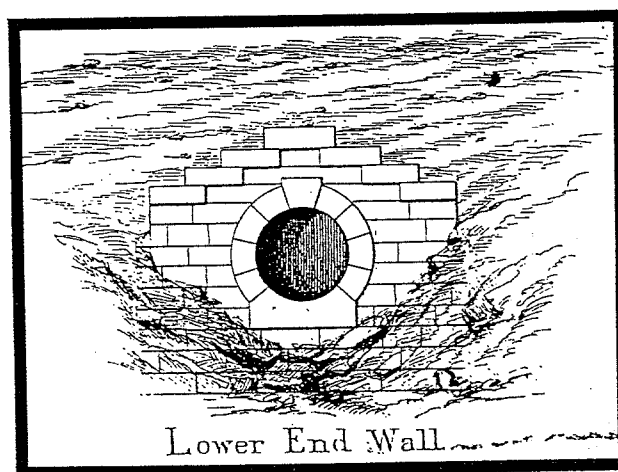


Figure 7 Drawing of a culvert by M.C. Meigs.

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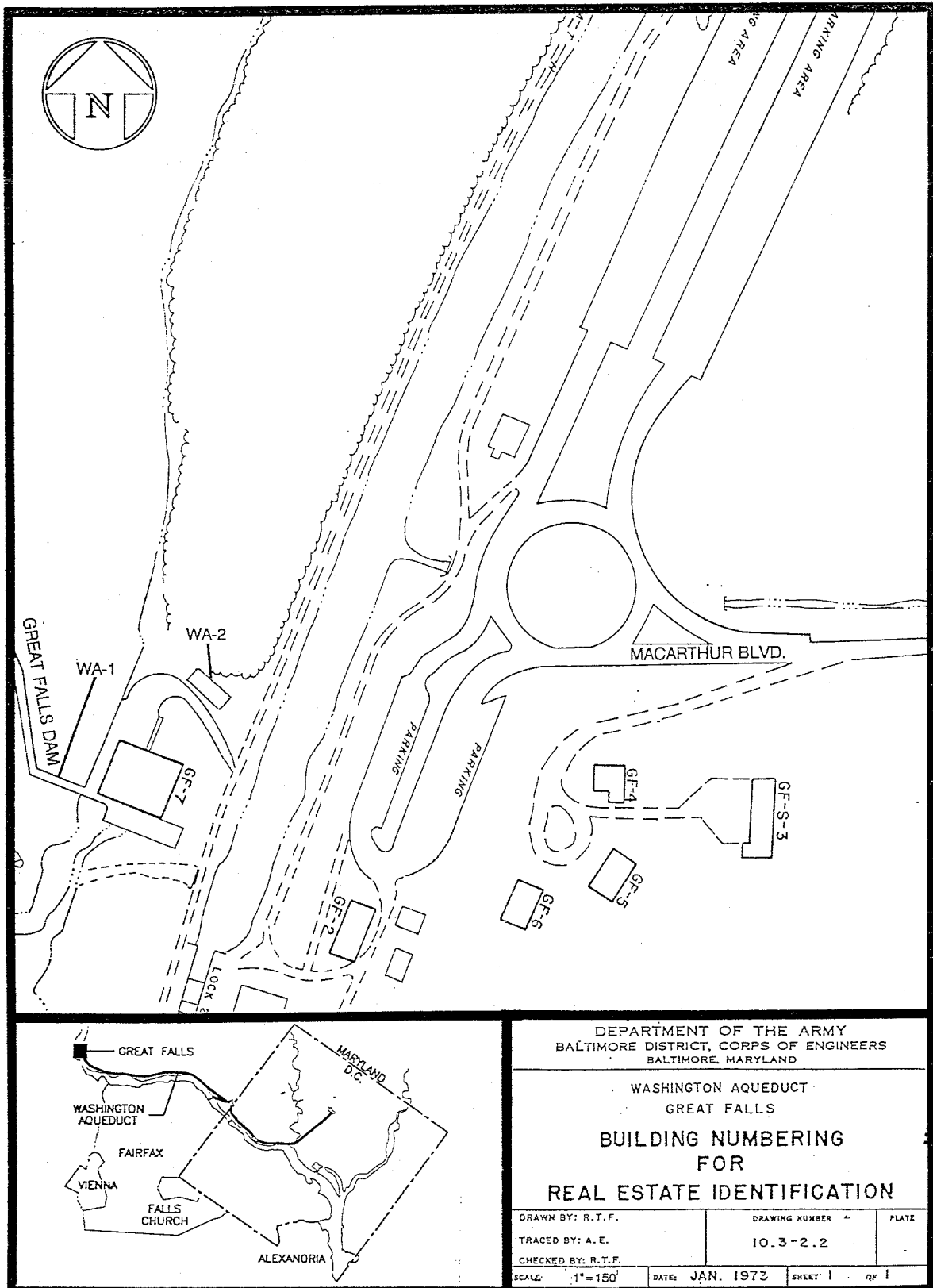


Figure 4 Map of Great Falls.

M:29-49

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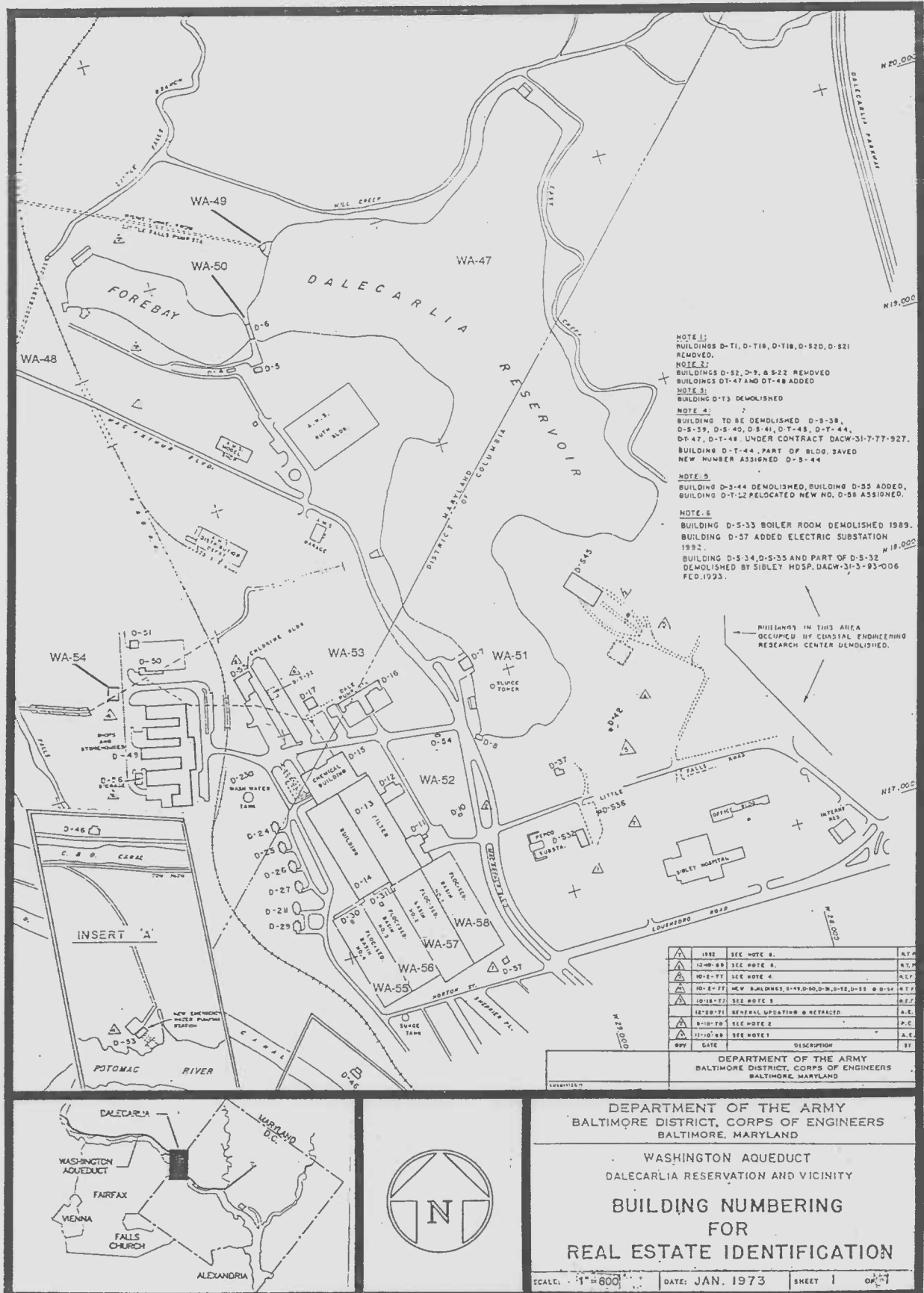


Figure 8 Map of the Dalecarlia Reservoir; only the property to the east of MacArthur Boulevard is included in the National Historic Landmark property boundaries.

M:29-49

DRAFT

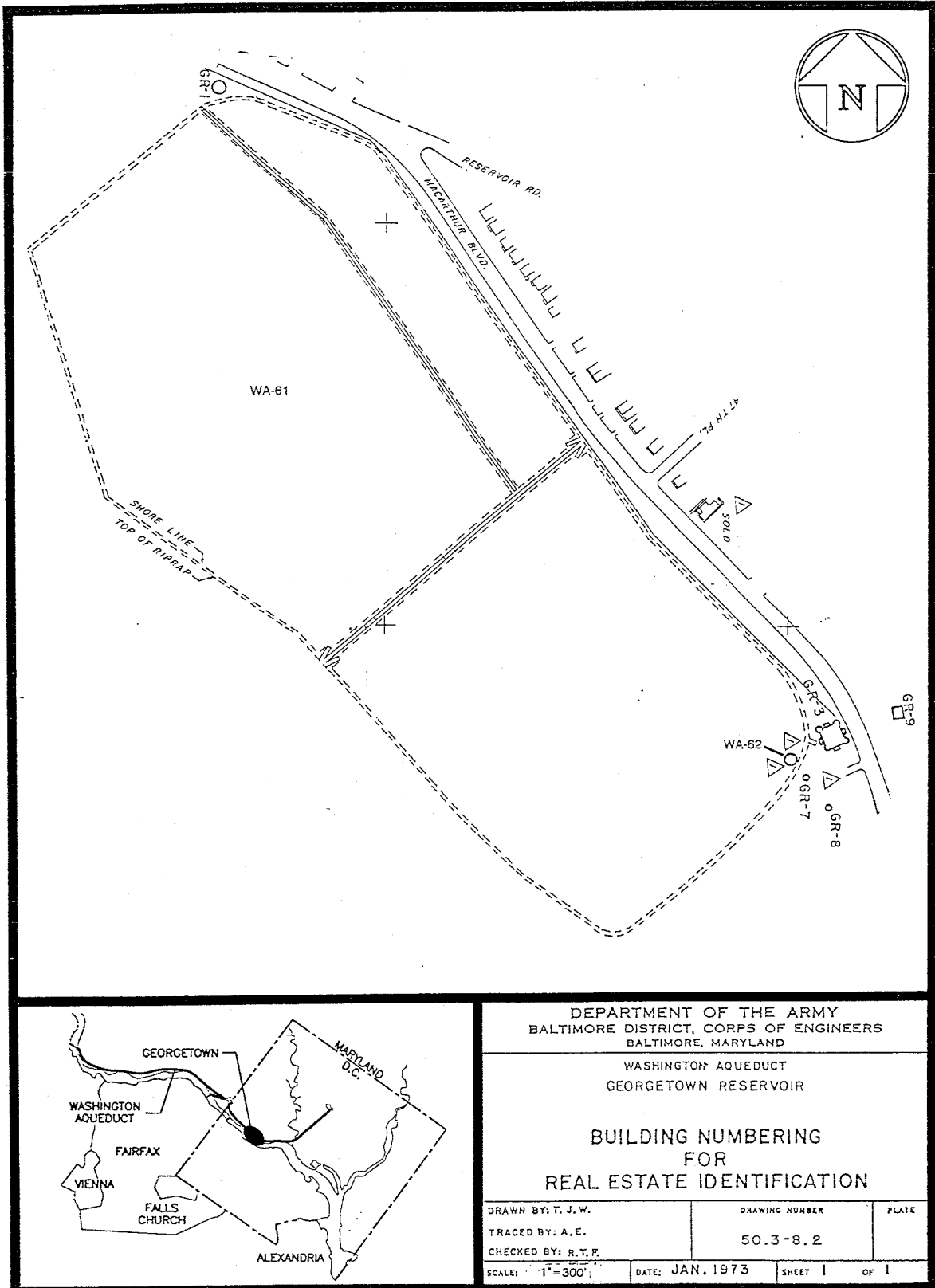


Figure 9 Map of the Georgetown Reservoir.

M:29-49

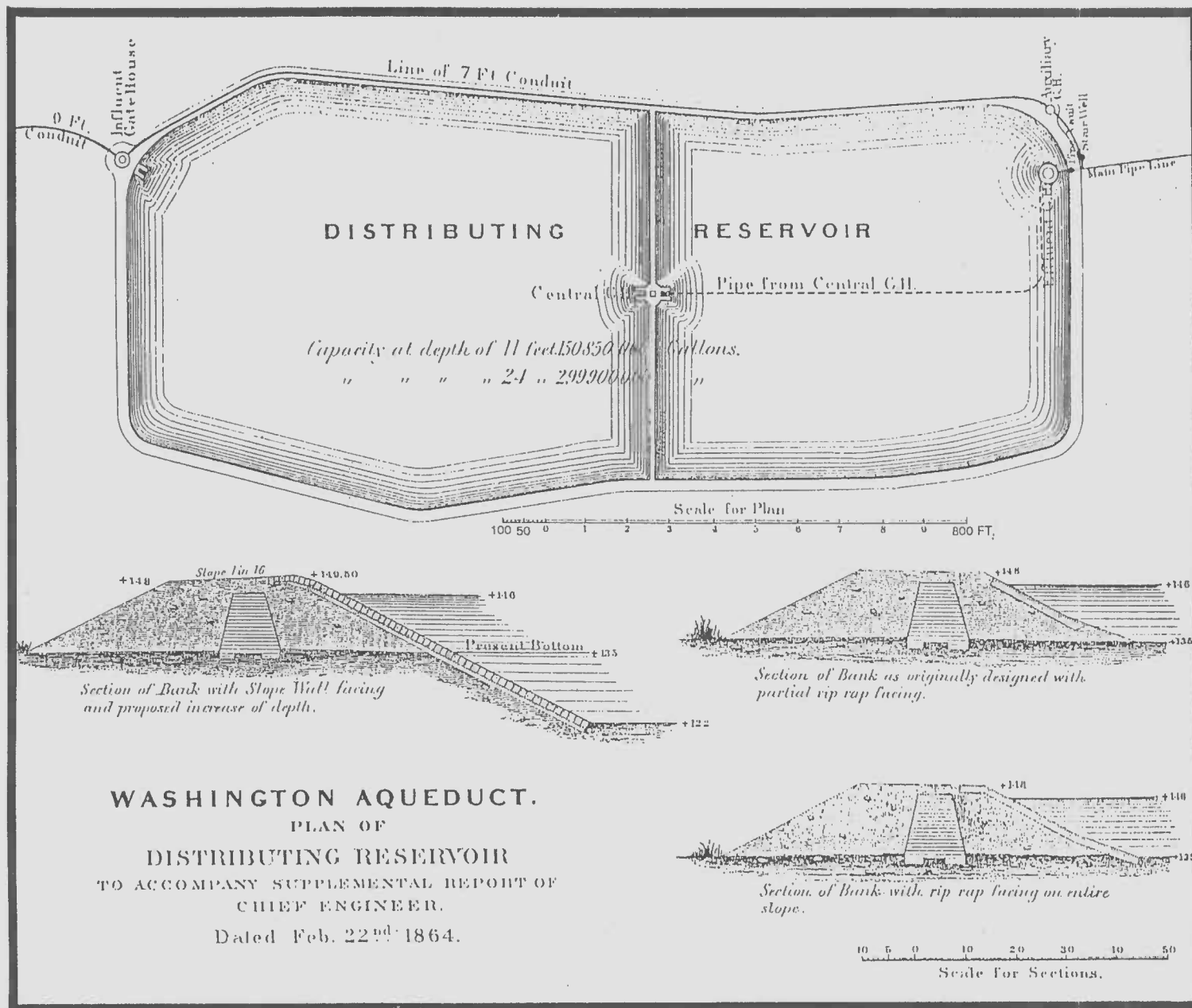


Figure 10

1864 Plan of the Distributing Reservoir (Source: 1864 Annual Report of the Chief Engineer).



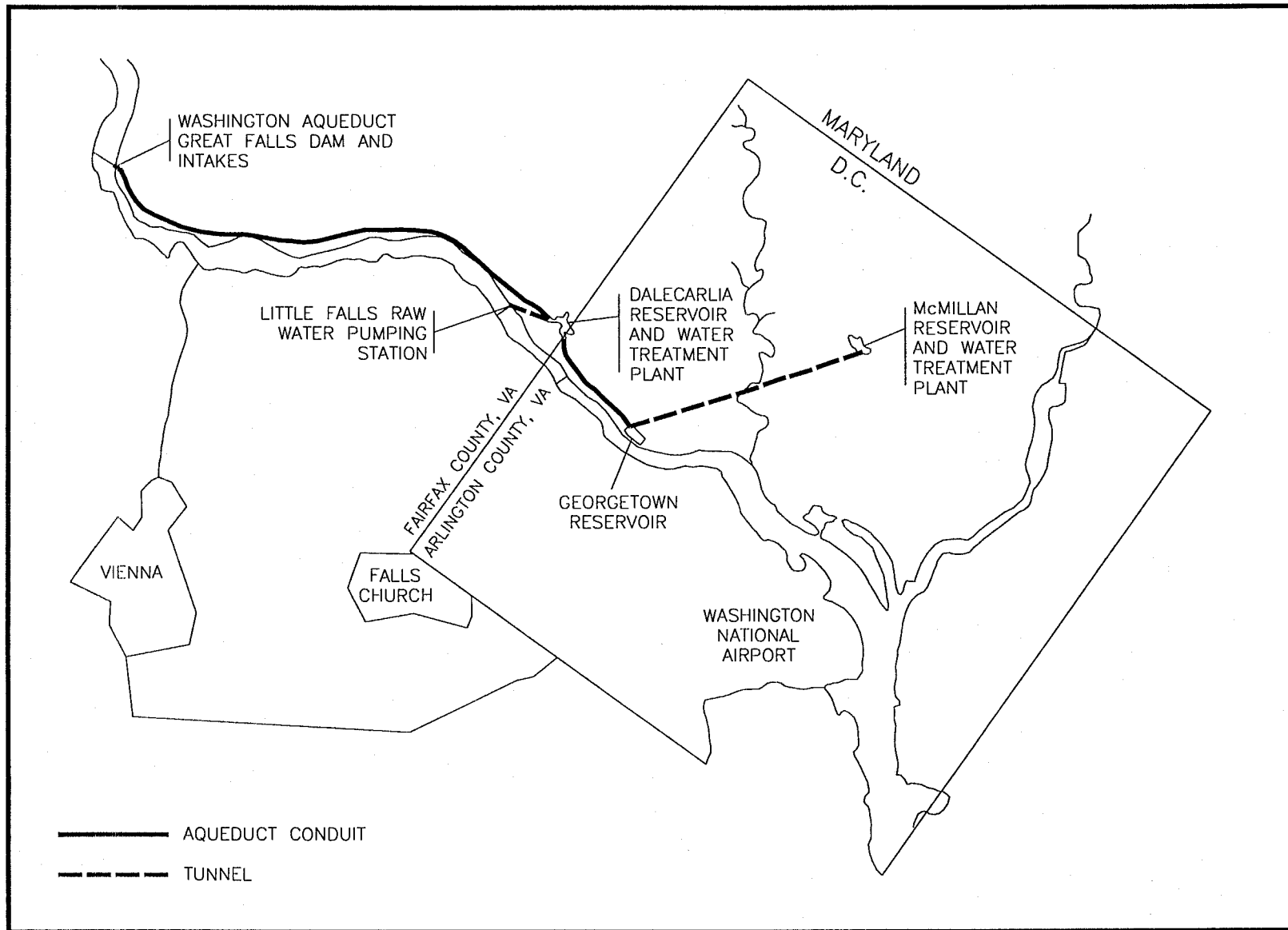


Figure 2 Schematic Map of the Washington Aqueduct as it currently exists.

M:29-49

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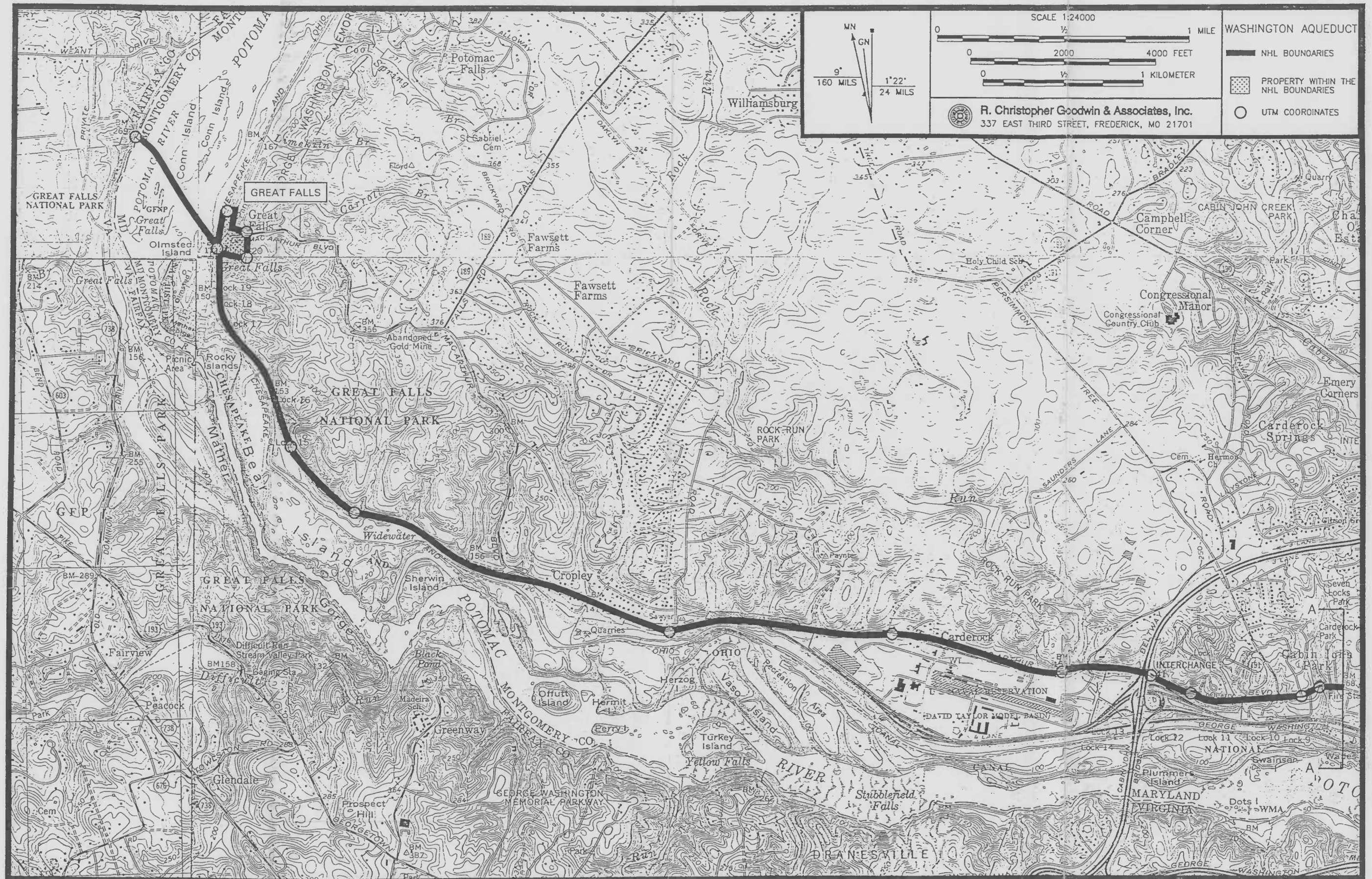


Figure 3a Map of Washington Aqueduct NHL District.

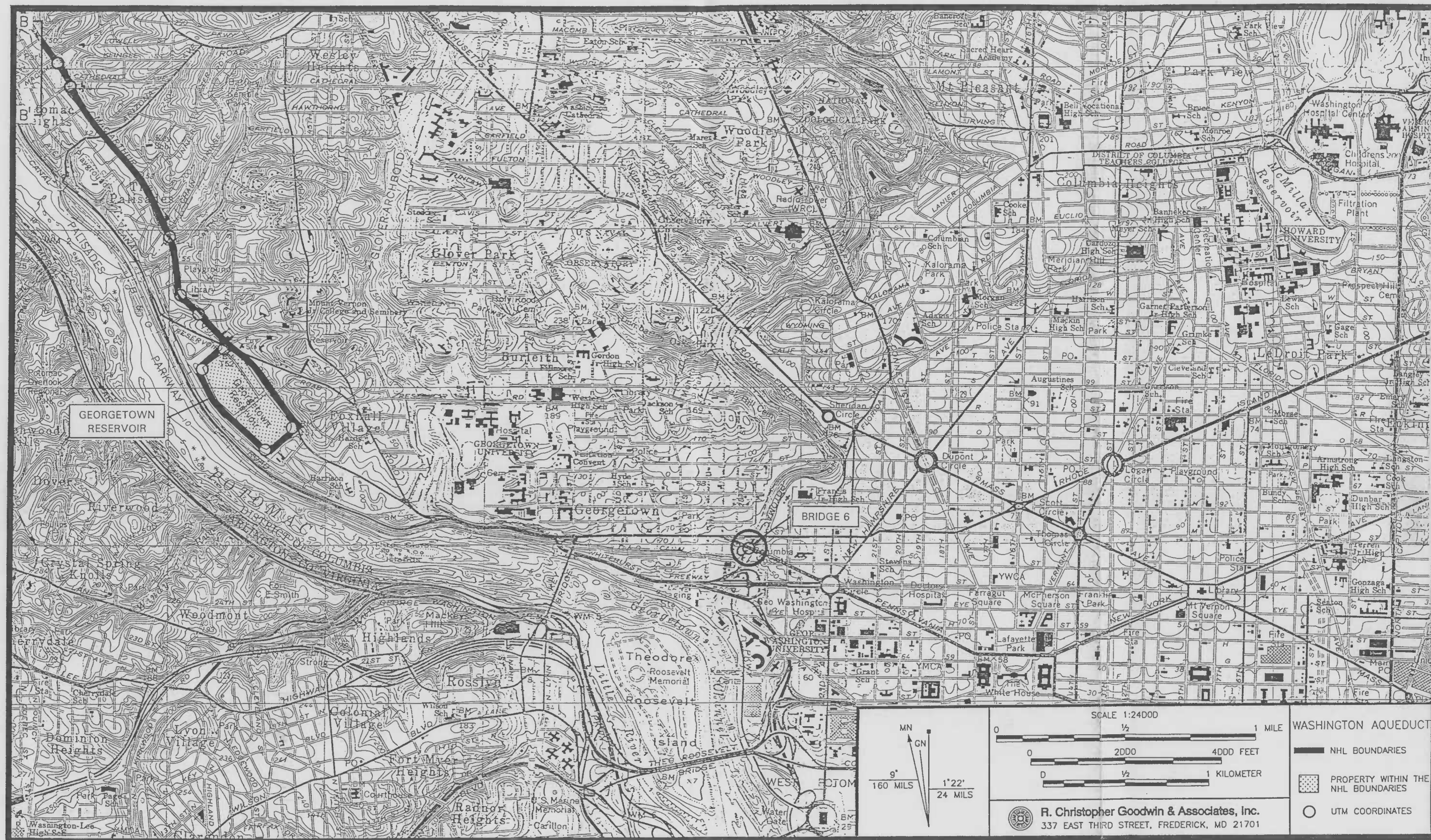


Figure 3b Map of Washington Aqueduct NHL District (Cont'd).

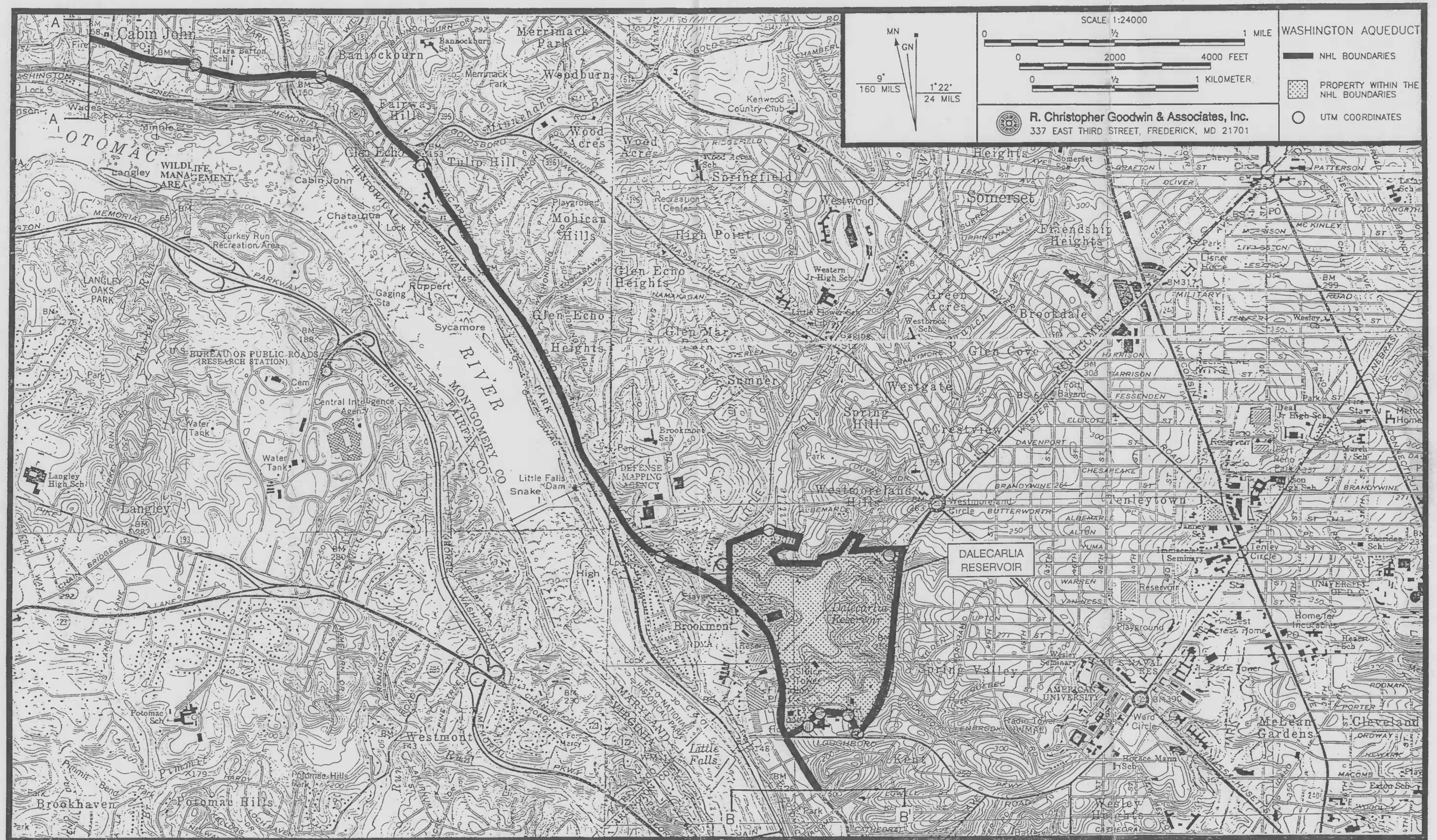


Figure 3c Map of Washington Aqueduct NHL District (Cont'd).